JAN

Access DB# 56406

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: R GITOMER Examiner #: 69630 Date: 12/7/01
Art Unit: 1623 Phone Number 30 8-0732 Serial Number: 09/926,138
Mail Box and Bldg/Room Location: 8B19 7A11 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

_____

Earliest Priority Filing Date: _____

For Sequence Searches Only ***Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.***

JAN

Point of Contact:
Jan Delaval
Librarian-Physical Sciences
CM1 1E01 Tel: 308-4498

****

STAFF USE ONLY		Type of Search		Vendors and cost where applicable	
Searcher:		NA Sequence (#)		STN	✓
Searcher Phone #:	4498	AA Sequence (#)		Dialog	
Searcher Location:		Structure (#)		Questel/Orbit	
Date Searcher Picked Up:	12/21	Bibliographic	✓	Dr.Link	
Date Completed:	12/21	Litigation		Lexis/Nexis	—
Searcher Prep & Review Time:		Fulltext		Sequence Systems	
Clerical Prep Time:	30	Patent Family		WWW/Internet	
Online Time:	90	Other		Other (specify)	

PTO-1590 (8-01)

=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 14:06:55 ON 21 DEC 2001
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 21 Dec 2001 VOL 135 ISS 26
FILE LAST UPDATED: 20 Dec 2001 (20011220/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

This file supports REG1stRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

HCAplus now provides online access to patents and literature covered in CA from 1907 to the present. Bibliographic information and abstracts were added in 2001 for over 3.8 million records from 1907-1966.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d all tot

L77 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:539832 HCAPLUS
DN 133:132109
TI Enzymatic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**
IN **Sugiyama, Atsushi**
PA Fuso Pharmaceutical Industries, Ltd., Japan
SO Jpn. Tokkyo Koho, 18 pp.
CODEN: JTXXFF
DT Patent
LA Japanese
IC ICM C12Q001-06
ICS C12Q001-34; C12Q001-42; C12Q001-48
CC **9-2** (Biochemical Methods)
Section cross-reference(s): **7**
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 3059435	B1	20000704	JP 1999-73690	19990318
	JP 2000262296	A2	20000926		
	WO 2000055356	A1	20000921	WO 2000-JP1494	20000313
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 1164199	A1	20011219	EP 2000-908024	20000313

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO
PRAI JP 1999-73690 A 19990318
WO 2000-JP1494 W 20000313
AB A simple and highly sensitive enzymic fluorescence quantitation assay method is provided for rapidly measuring **cAMP** and **adenylate cyclase** in a biol. sample (e.g., body fluid) contg. intrinsic non-cyclic adenine nucleotides without using radioactive reagents. The intrinsic non-cyclic adenine nucleotides (e.g., **ATP**, ADP, AMP) and glucose-6-phosphate present in the sample are eliminated by adding sufficient amts. of apyrase, adenosine deaminase and alk. phosphatase. **CAMP** is enzymically transformed to AMP with phosphodiesterase. Then, the amt. of AMP is fluorometrically detd. as NADPH after a series of enzymic reactions without using radioactive reagents.
ST **cAMP adenylate cyclase** enzymic analysis fluorometry
IT Analysis
(enzymic anal.; enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT Body fluid
Chelating agents
Fluorometry
Mammal (Mammalia)
(enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT **60-92-4, CAMP**
RL: ANT (Analyte); ANST (Analytical study)
(enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT **9012-42-4, Adenylate cyclase**
RL: ANT (Analyte); BAC (Biological activity or effector, except adverse); ANST (Analytical study); BIOL (Biological study)
(enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT **53-57-6**, NADPH
RL: ANT (Analyte); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process)
(enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT **56-65-5**, 5'-**ATP**, analysis **61-19-8**, 5'-AMP, analysis
RL: ANT (Analyte); PEP (Physical, engineering or chemical process); REM (Removal or disposal); ANST (Analytical study); PROC (Process)
(enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT **53-59-8**, NADP+ **9000-95-7**, Apyrase **9001-37-0**, Glucose oxidase **9001-40-5**, Glucose-6-phosphate dehydrogenase **9001-51-8**, Hexokinase **9001-59-6**, Pyruvate kinase **9001-78-9**, Alkaline phosphatase **9001-81-4**, Phosphoglucomutase **9001-82-5**, 6-Phosphogluconate dehydrogenase **9013-02-9**, Myokinase 9014-00-0, Luciferase **9025-82-5**, Phosphodiesterase **9026-93-1**, Deaminase, adenosine 9027-73-0, 5'-Nucleotidase **9035-74-9**, Glycogen phosphorylase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT **9005-79-2**, Glycogen, uses
RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); REM (Removal or disposal); ANST (Analytical study); PROC (Process); USES (Uses)
(enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT **60-00-4**, EDTA, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(enzymic and fluorometric assay for measuring **cAMP** and

adenylate cyclase)
IT **58-64-0**, 5'-ADP, processes
RL: PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)
IT **73-24-5D**, Adenine, nucleotides
RL: REM (Removal or disposal); PROC (Process)
(non-cyclic; enzymic and fluorometric assay for measuring **cAMP** and **adenylate cyclase**)

L77 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:340071 HCAPLUS
DN 133:262994
TI Utilization of spectral absorption for measurement of **adenylate cyclase** activity
AU Saegusa, Yoshiki; **Sugiyama, Atsushi**; Hashimoto, Keitaro
CS Department of Pharmacology, Yamanashi Medical University, Yamanashi, 409-3898, Japan
SO J. Clin. Lab. Anal. (2000), 14(3), 115-119
CODEN: JCANEM; ISSN: 0887-8013
PB Wiley-Liss, Inc.
DT Journal
LA English
CC **7-1** (Enzymes)
AB The purpose of this study was to improve the authors' previously described enzymic fluorometric assay of **adenylate cyclase** (I) activity. Using physicochem. characteristics of NADPH, of which a 0.1 mM soln. would have an optical d. of 0.627, the authors measured I activity by the spectral absorption of NADPH. The assay consisted of 2 parts: pharmacol. modulation of I and measurement of newly synthesized **cAMP**. The latter part involves 4 steps: enzymic destruction of noncyclic adenine nucleotides and phosphorylated metabolites, conversion of **cAMP** to **ATP**, amplification of **ATP** by enzymic cycling, and measurement of NADPH with spectral absorption, which was generated in proportion to initial **cAMP** levels. This new assay was tested in membrane prepns. made from rat hearts in comparison with the previously described fluorometric assay. The authors obtained identical results by spectrophotometry and fluorometry with high reproducibility. Because the fluorometric assay possesses a high sensitivity, whereas the spectrophotometric method is advantageous because of its wide anal. range of **cAMP** measurement, a combination of the fluorometric and spectrophotometric methods may offer a convenient way to measure I activities in various samples.
ST **adenylate cyclase** detn spectrophotometry
IT Spectrophotometry
(utilization of spectral absorption of NADPH for measurement of **adenylate cyclase** activity)
IT **9012-42-4, Adenylate cyclase**
RL: ANT (Analyte); ANST (Analytical study)
(utilization of spectral absorption of NADPH for measurement of **adenylate cyclase** activity)
IT **53-57-6**, NADPH
RL: PRP (Properties)
(utilization of spectral absorption of NADPH for measurement of **adenylate cyclase** activity)
RE.CNT 7
RE
(1) Koch, D; Tietz textbook of clinical chemistry, 3rd edition 1999, P320
(2) Passonneau, J; Enzymatic analysis 1993
(3) Salomon, Y; Anal Biochem 1974, V58, P541 HCAPLUS
(4) Sawada, N; J Clin Lab Anal 1999, V13, P90 HCAPLUS
(5) Sugiyama, A; Anal Biochem 1994, V218, P20 HCAPLUS
(6) Sugiyama, A; Anal Biochem 1995, V225, P368 HCAPLUS
(7) Volker, T; Anal Biochem 1985, V144, P347 HCAPLUS

L77 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:204079 HCAPLUS
DN 133:116954
TI Measurement of **adenylate cyclase** activity in the right ventricular endomyocardial biopsy samples from patients with chronic congestive heart failure
AU **Sugiyama, Atsushi**; Shirai, Tetsuro; Inoue, Kiyoshi; Lurie, Keith G.; Hashimoto, Keitaro
CS Department of Pharmacology, Yamanashi Medical University, Yamanashi, 409-3898, Japan
SO J. Clin. Lab. Anal. (2000), 14(2), 48-52
CODEN: JCANEM; ISSN: 0887-8013
PB Wiley-Liss, Inc.
DT Journal
LA English
CC **9-5** (Biochemical Methods)
AB A highly sensitive fluorometric assay technique was adopted in order to examine the **adenylate cyclase** activity in the minute right ventricular endomyocardial biopsy samples from patients with chronic congestive heart failure (n = 10). Norepinephrine (10-4 M) and adenosine (10-3 M) were incubated for 30 min with 10 .mu.l of membrane prepn. (1-2 mg protein/mg) to analyze the extent of the receptor-coupled **adenylate cyclase** activity. Forskolin (10-4 M) stimulation was used to est. the max. **adenylate cyclase** activity (pmol/mg protein/min, mean .+-. SE). The new microanal. **cAMP** assay involves four steps: enzymic destruction of noncyclic adenine nucleotides and phosphorylated metabolites, conversion of cyclicAMP to **ATP**, amplification of **ATP** by enzymic cycling, and fluorometric measurement of NADPH, which is generated in proportion to initial **cAMP** levels. Basal and forskolin-stimulated max. **adenylate cyclase** activities were 75 .+-. 8 and 123 .+-. 15, resp. Norepinephrine increased the **adenylate cyclase** activity to 107 .+-. 14, while adenosine tended to decrease it to 65 .+-. 7. In addn., elimination of adenosine by adenosine deaminase (10 U/mL) slightly increased the **adenylate cyclase** activity to 82 .+-. 9. These results indicate that the **adenylate cyclase** activity can be measured in minute endomyocardial biopsy samples. Use of this new approach shows promise of becoming a new and potentially important way to predict the efficacy of pharmacol. treatment.
ST **adenylate cyclase** detn fluorometry heart failure
IT Heart, disease
(failure; anal. of receptor-coupled influences on **adenylate cyclase** activity using fluorometry)
IT Fluorometry
(measurement of **adenylate cyclase** activity in right ventricular endomyocardial biopsy samples from patients with chronic congestive heart failure)
IT **9012-42-4, Adenylate cyclase**
RL: ANT (Analyte); ANST (Analytical study)
(anal. of receptor-coupled influences on **adenylate cyclase** activity using fluorometry)
IT 51-41-2, Norepinephrine 58-61-7, Adenosine, biological studies 66575-29-9, Forskolin
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(anal. of receptor-coupled influences on **adenylate cyclase** activity using fluorometry)
RE.CNT 13
RE
(1) Bohm, M; Circ Res 1989, V65, P1201 MEDLINE
(2) Bristow, M; Mol Pharmacol 1989, V35, P295 HCAPLUS
(3) Cruz Caturla, M; J Heart Lung Transplant 1992, V11, P1059 MEDLINE
(4) Golf, S; Cardiovasc Res 1986, V20, P637 MEDLINE
(5) Hershberger, R; Circulation 1991, V83, P1343 HCAPLUS
(6) Loh, E; Circ Res 1995, V76, P852 HCAPLUS
(7) Reithmann, C; Int J Cardiol 1996, V56, P11 MEDLINE

(8) Salomon, Y; Anal Biochem 1974, V58, P541 HCAPLUS
(9) Sawada, N; J Clin Lab Anal 1999, V13, P90 HCAPLUS
(10) Sugiyama, A; Anal Biochem 1995, V225, P368 HCAPLUS
(11) Sugiyama, A; J Cardiovasc Pharmacol 1997, V29, P734 HCAPLUS
(12) Sugiyama, A; J Lab Clin Med 1999, V133, P384 HCAPLUS
(13) Volker, T; Anal Biochem 1985, V144, P347 HCAPLUS

L77 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:288332 HCAPLUS
DN 131:114638
TI Preoperative assessment of **adenylylcyclase** activity as a functional marker of islet cell quality after transplantation in rats
AU **Sugiyama, Atsushi**; Kanazawa, Shigeo; Gore, Paul F.; Field, Jane M.; McKnite, Scott; Sutherland, David E. R.; Lurie, Keith G.
CS Departments of Medicine and Surgery, University of Minnesota, Minneapolis, MN, 55455, USA
SO J. Lab. Clin. Med. (1999), 133(4), 384-390
CODEN: JLCMAK; ISSN: 0022-2143
PB Mosby, Inc.
DT Journal
LA English
CC 14-2 (Mammalian Pathological Biochemistry)
Section cross-reference(s): **9**
AB To det. the potential value of measuring **adenylyl cyclase** activity as a pre-transplant functional marker of pancreatic islet cell quality, the prodn. rate of adenosine 3':5'-monophosphate was measured with a fluorometric assay in rat islet cells before transplantation. Islets were stored for different periods of time (0 to 96 h) and in different preservation solns. The **adenylyl cyclase** activities of islets stored in University of Wisconsin (UW) soln. for 3 h after isolation were significantly higher than those stored in Hanks' balanced salt soln. Similarly, the **adenylyl cyclase** activities of islets stored for more than 24 h in UW soln. decreased significantly with prolonged storage time. Preoperative **adenylyl cyclase** activity was compared with post-transplant islet function in a rat model of diabetes. Transplant success was evaluated by measuring blood glucose level and body wt. Although all transplants were ultimately successful in this study, the rate at which they achieved euglycemia varied, and this is the property that correlated with pre-transplant basal or forskolin-stimulated **adenylyl cyclase** activity. Addnl. studies showed that it was feasible to measure **adenylyl cyclase** activity in human islet cells. We conclude that preoperative measurement of basal and stimulated **adenylyl cyclase** activity may provide a useful clin. marker for assessing islet cell quality and differences in preservation media and may predict transplant success. Based on these data, addnl. studies evaluating the feasibility of using **adenylyl cyclase** activity as a research and clin. marker of islet cell viability are warranted.
ST human rat **adenylyl cyclase** pancreas islet cell transplantation diabetes
IT Preservation solutions (tissue)
(Hank's balanced salt soln., effect on **adenylyl cyclase** activity; preoperative assessment of **adenylyl cyclase** activity as functional marker of pancreatic islet cell quality after transplantation in rat model of diabetes)
IT Preservation solutions (tissue)
(University of Wisconsin solution, effect on **adenylyl cyclase** activity; preoperative assessment of **adenylyl cyclase** activity as functional marker of pancreatic islet cell quality after transplantation in rat model of diabetes)
IT Organ preservation
(effect on **adenylyl cyclase** activity; preoperative assessment of **adenylyl cyclase** activity as functional marker of pancreatic islet cell quality after transplantation in rat model of diabetes)

IT Transplant and Transplantation
(pancreatic islet; preoperative assessment of **adenylyl cyclase** activity as functional marker of pancreatic islet cell quality after transplantation in rat model of diabetes)

IT Diabetes mellitus
Pancreatic islet of Langerhans
(preoperative assessment of **adenylyl cyclase** activity as functional marker of pancreatic islet cell quality after transplantation in rat model of diabetes)

IT Pancreatic islet of Langerhans
(transplant; preoperative assessment of **adenylyl cyclase** activity as functional marker of pancreatic islet cell quality after transplantation in rat model of diabetes)

IT 50-99-7, D-Glucose, biological studies
RL: BOC (Biological occurrence); BIOL (Biological study); OCCU (Occurrence)
(blood, use in measuring transplant success; preoperative assessment of **adenylyl cyclase** activity as functional marker of pancreatic islet cell quality after transplantation in rat model of diabetes)

IT **9012-42-4, Adenylyl cyclase**
RL: BAC (Biological activity or effector, except adverse); BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(preoperative assessment of **adenylyl cyclase** activity as functional marker of pancreatic islet cell quality after transplantation in rat model of diabetes)

RE.CNT 15
RE
(1) Casanova, D; Diabetes Res 1989, V10, P31 MEDLINE
(2) Delfino, V; Transplantation 1993, V56, P1325 MEDLINE
(3) Field, M; J Surg Res 1989, V46, P474 MEDLINE
(4) Gray, D; Transplantation 1987, V43, P321 MEDLINE
(5) Jindal, R; Diabetes 1992, V41, P1056 HCAPLUS
(6) Lacy, P; Diabetes 1967, V16, P35 MEDLINE
(7) Malaisse, W; Endocrinology 1984, V115, P2015 HCAPLUS
(8) McKnite, S; Anal Biochem 1996, V235, P103 HCAPLUS
(9) Munn, S; Transplantation 1989, V47, P28 MEDLINE
(10) Prentki, M; Physiol Rev 1987, V67, P1185 HCAPLUS
(11) Pyzdrowski, K; N Engl J Med 1992, V327, P220 MEDLINE
(12) Sugiyama, A; Anal Biochem 1994, V218, P20 HCAPLUS
(13) Sugiyama, A; Anal Biochem 1995, V225, P368 HCAPLUS
(14) Vleit, J; Transplantation 1988, V45, P493
(15) Wahlberg, J; Cryobiology 1986, V23, P477 HCAPLUS

L77 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:191233 HCAPLUS
DN 131:41305
TI Measurement of **adenylate cyclase** activity in the minute bovine ciliary epithelial cells during the pharmacological stimulation of adrenergic and cholinergic receptors
AU Sawada, Norifumi; **Sugiyama, Atsushi**; Kashiwagi, Kenji; Tsukahara, Shigeo; Hashimoto, Keitaro
CS Department of Pharmacology, Yamanashi Medical University, Yamanashi, Japan
SO J. Clin. Lab. Anal. (1999), 13(2), 90-94
CODEN: JCANEM; ISSN: 0887-8013
PB Wiley-Liss, Inc.
DT Journal
LA English
CC **7-1** (Enzymes)
Section cross-reference(s): 1
AB Although essential to the secretion of aq. humor, little is known about the signal transduction underlying postreceptor adrenergic and cholinergic processes in the ciliary epithelium. We adopted a highly sensitive fluorometric assay technique in order to examine **adenylate cyclase** activity in minute membrane prepns. made from the bovine ciliary epithelial cells. The protein concn. of the prepn. was 3-5 mg/mL.

Norepinephrine (10-7, 10-6 and 10-5 M) and carbachol (10-7 and 10-5 M) were incubated with 10 .mu.l of membrane prepn. to analyze the extent of the receptor-coupled influences on the **adenylate cyclase** activity. Meanwhile, forskolin (10-5 M) was used to est. the max. **adenylate cyclase** activity. After the initial enzymic destruction of noncyclic adenine nucleotides and phosphorylated metabolites, the diester linkage of **cAMP** was cleaved and then converted to **ATP**. The **ATP** was enzymically amplified to about 10,000 times of fructose-6-phosphate. The NADPH, formed when the fructose-6-phosphate was converted to 6-phosphogluconolactone; was measured fluorometrically. Basal and forskolin-stimulated max. **adenylate cyclase** activities (pmol/mg protein/min) were 29.6 .+-. 7.6 and 86.6 .+-. 7.2 (mean .+-. SE), resp. Norepinephrine increased the **adenylate cyclase** activity in a dose-dependent manner, while carbachol hardly affected the activity. These results indicate that the **adenylate cyclase** activity can be measured in the minute ciliary epithelial cells and, moreover, that the current assay can be applied to assess the efficacy of newly available ophthalmic solns. or systemic drugs influencing **adenylate cyclase** activity in a discrete portion in the eye.

ST **adenylate cyclase** detn ciliary epithelium eye; adrenergic cholinergic receptor **adenylate cyclase** eye; glaucoma drug intervention **adenylate cyclase** detn

IT Eye
(ciliary epithelium; measurement of **adenylate cyclase** activity in the minute bovine ciliary epithelial cells during the pharmacol. stimulation of adrenergic and cholinergic receptors)

IT Adrenoceptors
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(measurement of **adenylate cyclase** activity in the minute bovine ciliary epithelial cells during the pharmacol. stimulation of adrenergic and cholinergic receptors)

IT **9012-42-4, Adenylate cyclase**
RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)
(measurement of **adenylate cyclase** activity in the minute bovine ciliary epithelial cells during the pharmacol. stimulation of adrenergic and cholinergic receptors)

IT 51-41-2, Norepinephrine
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(measurement of **adenylate cyclase** activity in the minute bovine ciliary epithelial cells during the pharmacol. stimulation of adrenergic and cholinergic receptors)

RE.CNT 19

RE

(1) Allen, R; Arch Ophthalmol 1986, V104, P1178 MEDLINE
(2) Bartels, S; Curr Eye Res 1987, V6, P307 HCAPLUS
(3) Bill, A; Exp Eye Res 1969, V8, P35 HCAPLUS
(4) Caprioli, J; J Ocul Pharmacol 1989, V5, P181 HCAPLUS
(5) Caprioli, J; Yale J Biol Med 1984, V57, P283 HCAPLUS
(6) Crawford, K; Invest Ophthalmol Vis Sci 1996, V37, P1348 MEDLINE
(7) Hoffman, B; Basic and clinical pharmacology 1998, P136
(8) Hu, D; Invest Ophthalmol Vis Sci 1993, V34, P2210 MEDLINE
(9) Jumblatt, J; Invest Opthalmol Vis Sci 1990, V6, P1103
(10) Kaufman, P; Acta Ophthalmol 1986, V64, P356 HCAPLUS
(11) Kaufman, P; Curr Eye Res 1985, V4, P877 HCAPLUS
(12) Liu, J; Curr Eye Res 1996, V15, P1025 MEDLINE
(13) Robinson, J; Am J Ophthalmol 1990, V109, P189 HCAPLUS
(14) Sugiyama, A; Anal Biochem 1994, V218, P20 HCAPLUS
(15) Sugiyama, A; Anal Biochem 1995, V225, P368 HCAPLUS
(16) Sugiyama, A; J Cardiovasc Pharmacol 1997, V29, P734 HCAPLUS
(17) Sugiyama, A; J Histochem Cytochem 1995, V43, P601 HCAPLUS
(18) Townsend, D; Invest Ophthalmol Vis Sci 1980, V19, P256 HCAPLUS
(19) Tsukahara, S; Exp Eye Res 1978, V26, P99 MEDLINE

L77 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1997:470445 HCAPLUS
DN 127:145499
TI **Measurement** of **adenylylcyclase** activity in the AV nodal region of the canine heart: evidence for inhibition by adenosine and acetylcholine
AU **Sugiyama, Atsushi**; McKnite, Scott; Adkisson, Wayne; Lurie, Keith G.
CS Cardiac Arrhythmia Cent., Cardiovascular Div., Dep. of Med., Univ. of Minnesota, Minneapolis, MN, USA
SO J. Cardiovasc. Pharmacol. (1997), 29(6), 734-739
CODEN: JCPCDT; ISSN: 0160-2446
PB Lippincott-Raven
DT Journal
LA English
CC 2-8 (Mammalian Hormones)
AB Although it is essential to cardiac conduction, little is known about the biochem. underlying postreceptor adrenergic, cholinergic and purinergic processes in the AV node. To study these mechanisms, the authors adapted a new and highly sensitive fluorometric assay for **cAMP** to characterize regional **adenylylcyclase** activity (**cAMP** prodn. in pmol/min/mg of protein) in membrane prepns. made from 20-50 pieces of freeze-dried, 20-.mu.m thick, microdissected samples of tissue from canine right atrium, the AV nodal region, and left ventricle. Basal and NaF-stimulated **adenylylcyclase** activity were 7.2 and 72.4 in atrial, 15.6 and 58.8 in AV nodal, and 6.4 and 66.7 in ventricular tissues, resp. Isoproterenol (10 .+-. 7-10 .+-. 4 M) increased **adenylylcyclase** activity in a dose-dependent fashion in three different regions. The isoproterenol (10-6 M)-stimulated **adenylylcyclase** activity was 14.1 in atrial, 21.9 in AV nodal and 13.4 in ventricular tissues. Adenosine (10-3 M) and carbachol (10-5 M) inhibited isoproterenol (10-6 M)-stimulated **adenylylcyclase** activity to 10.1, 12.9 in atrial, 15.1, 15.5 in AV nodal, and 7.5, 11.9 in ventricular tissues, resp. The results demonstrate that there are regional differences in **adenylylcyclase** activity under basal conditions and after adrenergic, purinergic, and cholinergic stimulation in the heart. Unlike adenosine, the inhibitory effects of cholinergic stimulation appear to be more specific for the AV node.
ST **adenylyl cyclase** heart catecholamine adenosine acetylcholine
IT Membranes (biological)
(adenosine and acetylcholine inhibition of **adenylylcyclase** activity in AV nodal region of canine heart)
IT Cholinergic receptors
Purinoceptors
.beta.-Adrenoceptors
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(adenosine and acetylcholine inhibition of **adenylylcyclase** activity in AV nodal region of canine heart)
IT Heart
(atrioventricular node; adenosine and acetylcholine inhibition of **adenylylcyclase** activity in AV nodal region of canine heart)
IT Ventricle (heart)
(left; adenosine and acetylcholine inhibition of **adenylylcyclase** activity in AV nodal region of canine heart)
IT Atrium (heart)
(right; adenosine and acetylcholine inhibition of **adenylylcyclase** activity in AV nodal region of canine heart)
IT 51-83-2, Carbachol 51-84-3, Acetylcholine, biological studies 58-61-7, Adenosine, biological studies
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(adenosine and acetylcholine inhibition of **adenylylcyclase** activity in AV nodal region of canine heart)
IT 7681-49-4, Sodium fluoride (NaF), biological studies 7683-59-2,

Isoproterenol **9012-42-4**, **Adenylylcyclase**
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BIOL (Biological study); PROC (Process)
(adenosine and acetylcholine inhibition of **adenylylcyclase** activity in AV nodal region of canine heart)

IT **60-92-4**, **CAMP**
RL: BPR (Biological process); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); PROC (Process)
(adenosine and acetylcholine inhibition of **adenylylcyclase** activity in AV nodal region of canine heart)

L77 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1997:287125 HCAPLUS
DN 126:274154
TI Enzymic fluorometric assay for **adenylate cyclase**
IN Lurie, Keith G.; Wiegn, Phi; **Sugiyama, Atsushi**
PA Regents of the University of Minnesota, USA
SO U.S., 22 pp. Cont.-in-part of U.S. 5,316,907.
CODEN: USXXAM
DT Patent
LA English
IC ICM C12Q001-00
NCL 435004000
CC **7-1** (Enzymes)
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5618665	A	19970408	US 1994-184040	19940121
	US 5316907	A	19940531	US 1993-7847	19930122
	WO 9417198	A1	19940804	WO 1994-US810	19940121

W: CA, CN, JP
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRAI US 1993-7847 19930122
US 1994-184040 19940120

AB A method for measuring the amt. of **adenylate cyclase** without the use of radioactive reagents is provided. The method comprises combining a sample of physiol. material contg. an amt. of **cAMP** with (a) a mixt. of enzymes effective to eliminate any other endogenous adenine nucleotides which may be present in the sample; and (b) an amt. of alk. phosphatase effective to eliminate any glucose-6-phosphate present in the sample. The **cAMP** present in said sample is then converted to AMP and the amt. of AMP measured, which may then be correlated to the amt. of **cAMP** and AC present in the sample.

ST enzymic fluorometric assay **adenylate cyclase**

IT **9012-42-4**, **Adenylate cyclase**
RL: ANT (Analyte); ANST (Analytical study)
(enzymic fluorometric assay for **adenylate cyclase**)

IT **60-92-4**, **CAMP** **9001-78-9**, Alkaline phosphatase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enzymic fluorometric assay for **adenylate cyclase**)

IT **56-73-5**, Glucose-6-phosphate **73-24-5D**, Adenine, nucleotides
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(enzymic fluorometric assay for **adenylate cyclase**)

L77 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1996:126961 HCAPLUS
DN 124:168906
TI A bioluminescent enzymic assay for **adenylylcyclase** activity
AU McKnite, Scott; Evingson, Matthew; Pennington, Jennifer; Adkisson, Wayne; **Sugiyama, Atsushi**; Lurie, Keith G.
CS Cardiac Arrhythmia Center, University Minnesota, Minneapolis, MN, 55455, USA
SO Anal. Biochem. (1996), 235(1), 103-6
CODEN: ANBCA2; ISSN: 0003-2697
DT Journal

LA English
CC **7-1** (Enzymes)
AB The authors report here bioluminescent enzymic assay for **adenylylcyclase** activity.
ST **adenylylcyclase** detection
IT **9012-42-4, Adenylyl cyclase**
RL: ANT (Analyte); ANST (Analytical study)
(a bioluminescent enzymic assay for **adenylylcyclase** activity)

L77 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1995:752323 HCAPLUS
DN 123:191872
TI Enzymic fluorometric assay for **adenylyl cyclase** activity. Comparison with radioimmunoassay and original [.alpha.-32P] **ATP** Salomon method
AU **Sugiyama, Atsushi**; Lurie, Keith G.
CS Dep. Pharmacology, Yamanashi Medical Univ., Tamaho, 409-38, Japan
SO Yamanashi Ika Daigaku Zasshi (1995), 10(1), 11-19
CODEN: YIDZE8; ISSN: 0912-0025
DT Journal
LA English
CC **7-1** (Enzymes)
AB An enzymic fluorometric assay was developed to assess the **adenylyl cyclase** activity in membrane prepns. The assay consists of 2 parts: (1) pharmacol. stimulation or inhibition of **adenylyl cyclase**, and (2) measurement of newly synthesized **cAMP**. The crit. step of **cAMP** measurement is the initial enzymic destruction of noncyclic adenine nucleotides and phosphorylated metabolites, which can interfere with later assay steps. This is accomplished using a combination of apyrase, 5'-nucleotidase, adenosine deaminase, and alk. phosphatase. The diester linkage of **cAMP** is then cleaved and the newly generated AMP is measured fluorometrically. The **adenylyl cyclase** activity was measured in rabbit cardiac membrane prepns. and compared with a RIA and original [.alpha.-32P]**ATP** Salomon assay (Y. Salomon et al., 1979). With the enzymic fluorometric assay, the basal activity and that after exposure to isoproterenol (10-7 and 10-6 M), NaF (10-2 M), guanylyl-5'-imidodiphosphate (10-4 M), carbachol (10-6 M) and adenosine (10-3 M) were 67, 88, 147, 2972, 117, 56, and 34 (**cAMP** prodn. pmol/mg protein/min), resp. The total assay duration, including sample reading procedure, was 6.5 h. The results were virtually identical to those obtained using the RIA or Salomon methods. It was concluded that this new assay is highly sensitive, safe, versatile, inexpensive, and has multiple potential applications.
ST **adenylyl cyclase** detn fluorometry
IT **9012-42-4, Adenylyl cyclase**
RL: ANT (Analyte); ANST (Analytical study)
(enzymic fluorometric assay for **adenylyl cyclase** activity)

L77 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1995:419011 HCAPLUS
DN 122:259295
TI Measurement of **adenylylcyclase** activity with an enzymic fluorometric assay
AU **Sugiyama, Atsushi**; McKnite, Scott; Lurie, Keith G.
CS Cardiovascular Division, Univ. of Minnesota, Minneapolis, MN, 55455, USA
SO Anal. Biochem. (1995), 225(2), 368-71
CODEN: ANBCA2; ISSN: 0003-2697
DT Journal
LA English
CC **7-1** (Enzymes)
AB The new enzymic fluorometric assay for **adenylylcyclase** activity offers a no. of advantages to current techniques in terms of safety, economy, versatility, and sensitivity. The reaction vols., cycling duration, and concns. of enzymes, substrates and cofactors described here

should provide a convenient guide to the measurement of **adenylylcyclase** activity in a wide variety of different tissues.

ST **adenylylcyclase** fluorometry **cAMP ATP** GTP enzyme

IT Enzymes
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(measurement of **adenylylcyclase** activity with an enzymic fluorometric assay)

IT **9012-42-4, Adenylyl cyclase**
RL: ANT (Analyte); ANST (Analytical study)
(measurement of **adenylylcyclase** activity with an enzymic fluorometric assay)

IT **56-65-5**, 5' **ATP**, uses **60-92-4, CAMP**
86-01-1, 5' GTP
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(measurement of **adenylylcyclase** activity with an enzymic fluorometric assay)

L77 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1995:290576 HCAPLUS
DN 122:50485
TI Enzymic fluorometric assay for tissue **cAMP**
AU **Sugiyama, Atsushi**; Wiegn, Phi; McKnite, Scott; Lurie, Keith G.
CS Department Medicine, University Minnesota, Minneapolis, MN, 55455, USA
SO J. Clin. Lab. Anal. (1994), 8(6), 437-42
CODEN: JCANEM; ISSN: 0887-8013
DT Journal
LA English
CC **9-5** (Biochemical Methods)
AB **CAMP** is commonly measured using either immunoassay or high-performance liq. chromatog. The current methods are sensitive but may lack versatility and be expensive; also, radioactivity is potentially harmful to the operator and environment. Given these concerns, the authors developed a highly sensitive enzymic fluorometric assay for **cAMP**. The method consists of five steps: (1) destruction of interfering compds. with apyrase, 5' nucleotidase, adenosine deaminase, and alk. phosphatase; (2) conversion of **cAMP** to AMP; (3) conversion of AMP to **ATP**; (4) amplification of **ATP** by **ATP**-ADP cycling; and (5) fluorometric measurement of resultant NADPH. **CAMP** was measured in male Sprague Dawley rats anesthetized with pentobarbital. Stimulated rats received isoproterenol (16 .mu.g/kg, s.q.), and aminophylline (20 mg/kg, s.q.), whereas controls received no addnl. drug. With the enzymic fluorometric assay, **cAMP** content in heart, liver, and kidney (pmol/mg wet wt.) was 0.34, 0.33, and 0.92 in the control group and 0.77, 0.66, and 1.53 in the stimulated group, resp. The total assay duration including sample reading procedure varied at 4.5-9.5 h, depending on its sensitivity. **CAMP** from the same samples was measured using a com. available enzyme immunoassay kit and was very similar to the enzymic fluorometric assay. The authors conclude that this new assay is sensitive, safe, versatile, and inexpensive and can be used to measure **cAMP** in multiple types of tissue, including biopsy samples weighing <200 .mu.g.

ST enzyme fluorometric assay **cAMP**

IT Spectrochemical analysis
(fluorometric, enzymic; enzymic fluorometric assay for tissue **cAMP**)

IT **60-92-4, CAMP**
RL: ANT (Analyte); ANST (Analytical study)
(enzymic fluorometric assay for tissue **cAMP**)

IT **9000-95-7**, Apyrase **9001-78-9 9026-93-1**, Adenosine deaminase 9027-73-0, 5'-Nucleotidase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enzymic fluorometric assay for tissue **cAMP**)

L77 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2001 ACS
AN 1994:239327 HCAPLUS

DN 120:239327
TI An enzymic fluorometric assay for adenosine 3':5'-monophosphate
AU **Sugiyama, Atsushi**; Lurie, Keith G.
CS Dep. Med., Univ. Minnesota, Minneapolis, MN, 55455, USA
SO Anal. Biochem. (1994), 218(1), 20-5
CODEN: ANBCA2; ISSN: 0003-2697
DT Journal
LA English
CC **9-2** (Biochemical Methods)
Section cross-reference(s): **7**
AB An enzymic assay for adenosine 3':5'-monophosphate (**cAMP**) is described. Current measurement techniques can be expensive, time-consuming, and lack versatility. The crit. step of this new method is the enzymic destruction of endogenous purinergic noncyclic nucleotides. The diester linkage of **cAMP** is then cleaved and AMP is phosphorylated to **ATP**. Newly formed **ATP** is amplified using **ATP**-ADP cycling reactions and NADPH is measured fluorometrically. The **cAMP** was measured in neonatal rat ventricular myocytes cultured on std. 100-mm dishes and treated with 2 .mu.M 3-isobutyl-1-methylxanthine .+-. 1 .mu.M isoproterenol. When the enzymic fluorometric assay was compared with an immunocolorimetric assay and a RIA, **cAMP** content (pmol/plate mean + SE) was 124.3 .+-. 6.7, 130.6 .+-. 3.9, and 144.0 .+-. 4.4 without isoproterenol and 656.4 .+-. 23.5, 659.5 .+-. 54.1, and 677.1 .+-. 48.9 with isoproterenol, resp. The std. curve with the enzymic fluorometric assay is linear, in contrast to the curves of the nonlinear immunocolorimetric assay and RIA. The enzymic fluorometric assay can be used to detect <20 fmol of **cAMP** /sample and can be adapted to measure <1 fmol/sample. It can also be used to measure the activities of **adenylate cyclase** and phosphodiesterase. In summary, this enzymic **cAMP** assay is sensitive, safe, versatile, and inexpensive and has multiple potential applications.
ST **cAMP** enzymic fluorometric assay
IT Heart, composition
(ventricle, **cAMP** of, enzymic fluorometric assay for)
IT **60-92-4, cAMP**
RL: ANT (Analyte); ANST (Analytical study)
(detn. of, enzymic fluorometric assay for)
IT **9000-95-7**, Apyrase **9001-40-5**, Glucose-6-phosphate dehydrogenase **9001-41-6**, Phosphoglucoisomerase **9001-51-8**, Hexokinase **9001-59-6**, Pyruvate kinase **9001-78-9**, Alkaline phosphatase **9013-02-9**, Myokinase **9025-82-5**, Phosphodiesterase **9026-93-1**, Adenosine deaminase 9027-73-0, 5'-Nucleotidase
RL: ANST (Analytical study)
(in **cAMP** detn. by enzymic fluorometric assay)

=> d all tot

L96 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2001 ACS
AN 1997:287125 HCAPLUS
DN 126:274154
TI Enzymic fluorometric assay for **adenylate cyclase**
IN Lurie, Keith G.; Wiegn, Phi; **Sugiyama, Atsushi**
PA Regents of the University of Minnesota, USA
SO U.S., 22 pp. Cont.-in-part of U.S. 5,316,907.
CODEN: USXXAM
DT Patent
LA English
IC ICM C12Q001-00
NCL 435004000
CC **7-1** (Enzymes)
FAN.CNT 3

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI	US 5618665	A	19970408	US 1994-184040	19940121
	US 5316907	A	19940531	US 1993-7847	19930122 <--
	WO 9417198	A1	19940804	WO 1994-US810	19940121

W: CA, CN, JP
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRAI US 1993-7847 19930122
US 1994-184040 19940120

AB A method for measuring the amt. of **adenylate cyclase** without the use of radioactive reagents is provided. The method comprises combining a sample of physiol. material contg. an amt. of **cAMP** with (a) a mixt. of enzymes effective to eliminate any other endogenous adenine nucleotides which may be present in the sample; and (b) an amt. of **alk. phosphatase** effective to eliminate any glucose-6-phosphate present in the sample. The **cAMP** present in said sample is then converted to AMP and the amt. of AMP measured, which may then be correlated to the amt. of **cAMP** and AC present in the sample.

ST enzymic fluorometric assay **adenylate cyclase**

IT **9012-42-4, Adenylate cyclase**
RL: **ANT (Analyte)**; **ANST (Analytical study)**
(enzymic fluorometric assay for **adenylate cyclase**)

IT **60-92-4, CAMP 9001-78-9, Alkaline phosphatase**
RL: ARG (Analytical reagent use); **ANST (Analytical study)**; USES (Uses)
(enzymic fluorometric assay for **adenylate cyclase**)

IT **56-73-5**, Glucose-6-phosphate **73-24-5D**, Adenine, nucleotides
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(enzymic fluorometric assay for **adenylate cyclase**)

L96 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2001 ACS
AN 1994:573937 HCAPLUS
DN 121:173937
TI Enzymic fluorometric assay for **adenylate cyclase**
IN Lurie, Keith G.; Wiegm, Phi
PA University of Minnesota, USA
SO PCT Int. Appl., 61 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C12Q001-00
ICS C12Q001-44; C12Q001-42; C12Q001-26; C12N009-06; C12N009-14; G01N033-48; G01N021-76
CC 7-1 (Enzymes)

FAN.CNT 3

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9417198	A1	19940804	WO 1994-US810	19940121

W: CA, CN, JP
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

US 5316907	A	19940531	US 1993-7847	19930122 <--
US 5618665	A	19970408	US 1994-184040	19940121

PRAI US 1993-7847 19930122
US 1994-184040 19940120

AB A method for measuring **adenylate cyclase** (AC) in a sample of physiol. material which does not employ radioactive reagents is provided. The method is more sensitive and simpler to perform than prior art assays. The method comprises (a) providing a physiol. sample contg. **cAMP** produced by endogenous AC, and other endogenous adenine nucleotides selected from the group consisting of ATP, AMP, ADP and mixts. thereof; (b) combining the sample with effective amts. of **apyrase**, 5'-nucleotidase, so as to enzymically eliminate said other endogenous adenine nucleotides and an amt. of **alk. phosphatase** to eliminate the glucose-6-phosphate in the sample; (c) enzymically converting the **cAMP** into AMP; and (d) measuring the amt. of AMP,

said amt. providing a measure of the amt. of **cAMP** and AC in the sample. The AMP may be used to stimulate enzymic prodn. of NADPH, which may be measured fluorometrically.

ST **adenylate cyclase** detn fluorometry AMP NADPH

IT **60-92-4, CAMP**
RL: **ANST (Analytical study)**
(detn. of **adenylate cyclase** activity and, fluorometric, conversion of **cAMP** to AMP and AMP stimulation of enzymic prodn. of NADPH in relation to)

IT **9012-42-4, Adenylate cyclase**
RL: **ANT (Analyte); ANST (Analytical study)**
(detn. of, fluorometric, conversion of **cAMP** to AMP and AMP stimulation of enzymic prodn. of NADPH in)

IT **61-19-8**, AMP, analysis
RL: ANST (Analytical study)
(enzymic prodn. and measurement of, in fluorometric detn. of **adenylate cyclase**)

IT **9026-93-1, Adenosine deaminase**
RL: ANST (Analytical study)
(in **adenylate cyclase** fluorometric detn., conversion of ATP and AMP and adenosine to inosine in relation to)

IT 9027-73-0, 5'-Nucleotidase
RL: ANST (Analytical study)
(in **adenylate cyclase** fluorometric detn., conversion of ATP and AMP to inosine in relation to)

IT **9000-95-7, Apyrase**
RL: ANST (Analytical study)
(in **adenylate cyclase** fluorometric detn., conversion of ATP to inosine in relation to)

IT **9001-78-9, Alk. phosphatase**
RL: ANST (Analytical study)
(in **adenylate cyclase** fluorometric detn., elimination of glucose-6-phosphate in relation to)

IT **53-57-6**, NADPH **53-59-8**, NADP **56-73-5**, Glucose-6-phosphate 328-50-7, .alpha.-Ketoglutarate 9000-90-2, .alpha.-Amylase **9001-37-0**, Glucose oxidase **9001-40-5**, Glucose-6-phosphate dehydrogenase **9001-81-4**, Phosphoglucomutase **9005-79-2**, Glycogen, uses 9029-11-2, Glutamate dehydrogenase 9032-10-4, Glycogen phosphorylase a **9036-21-9, CAMP** phosphodiesterase 9073-95-4, Phosphogluconate dehydrogenase 10139-18-1, Glucose-1,6-diphosphate 14265-44-2, Phosphate, uses
RL: ANST (Analytical study)
(in fluorometric detn. of **adenylate cyclase**, conversion of **cAMP** to AMP and AMP stimulation of enzymic prodn. of NADPH in relation to)

L96 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2001 ACS
AN 1994:477234 HCAPLUS
DN 121:77234
TI Enzymic fluorometric assay for **adenylate cyclase**
IN Lurie, Keith G.; Wiegn, Phi
PA University of Minnesota, USA
SO U.S., 17 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM C12Q001-00
ICS G01N021-76
NCL 435004000
CC 7-1 (Enzymes)
Section cross-reference(s): 9

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5316907	A	19940531	US 1993-7847	19930122 <--
	WO 9417198	A1	19940804	WO 1994-US810	19940121

W: CA, CN, JP
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
US 5618665 A 19970408 US 1994-184040 19940121
PRAI US 1993-7847 19930122
US 1994-184040 19940120

AB A method of measuring **adenylate cyclase** (AC) in a sample of physiol. material which does not employ radioactive reagents is provided, comprising: (a) providing a physiol. sample contg. **cAMP** produced by endogenous AC, and other endogenous adenine nucleotides selected from the group consisting of ATP, AMP, ADP and mixts. thereof; (b) combining the sample with effective amts. of **apyrase**, 5'-nucleotidase, and **adenosine deaminase** so as to enzymically eliminate the other endogenous adenine nucleotides in the sample; (c) enzymically converting the **cAMP** into AMP; and (d) measuring the amt. of AMP, the amt. providing a measure of the amt. of **cAMP** and AC in the sample. Frozen heart tissue was homogenized in NaOH soln., **cAMP** was added as a control, and the homogenate was treated with cleaning reaction mixt. (Tris-HCl pH 8, MgCl2, CaCl2, 5'-nucleotidase, **apyrase**, and **adenosine deaminase** in water). **CAMP** reaction mixt. (imidazole pH 6.9, MgCl2, EGTA, BSA, H2HPO4, glycogen, glucose-1,6-diphosphate, NADP+, DTT, phosphodiesterase, glucose-6-phosphate dehydrogenase, phosphoglucomuatase, and glycogen phosphorylase a in water) was added and incubated with the sample. 2-Amino-2-methyl-1-propanol buffer (pH 9.9) was added and the fluorescence was measured at 340 nm. From a **cAMP** std. plot, the tissue sample was detd. to contain 12 pmol **cAMP**.

ST **adenylate cyclase** enzyme fluorometry; **cAMP** enzyme fluorometry detn

IT Body fluid
(**adenylate cyclase** enzymic-fluorometric detn. in)

IT Heart, composition
(**cAMP** detn. in, enzymic-fluorometric)

IT Animal tissue
(mammalian, **adenylate cyclase** enzymic-fluorometric detn. in)

IT Mammal
(tissue of, **adenylate cyclase** enzymic-fluorometric detn. in)

IT Heart, composition
(His bundle, **cAMP** detn. in, of rat, enzymic-fluorometric)

IT Heart, composition
(atrioventricular node, **cAMP** detn. in, of rat, enzymic-fluorometric)

IT Heart, composition
(left ventricle, **cAMP** detn. in, of rat, enzymic-fluorometric)

IT Heart, composition
(right atrium, **cAMP** detn. in, of rat, enzymic-fluorometric)

IT **60-92-4, CAMP 9012-42-4, Adenylate cyclase**
RL: **ANT (Analyte); ANST (Analytical study)**
(detn. of, enzymic-fluorometric)

IT 7681-49-4, Sodium fluoride, biological studies
RL: PRP (Properties)
(effect of, on **adenylate cyclase** activity, enzymic-fluorometric **adenylate cyclase** assay in relation to)

IT 58-55-9, Theophylline, biological studies 7683-59-2, Isoproterenol 34273-04-6, Guanylyl-5'-imidodiphosphate
RL: PRP (Properties)
(effect of, on basal **adenylate cyclase** activity, enzymic-fluorometric **adenylate cyclase** assay in relation to)

IT **53-59-8**, NADP+ 56-86-0, Glutamic acid, uses **59-56-3**, Glucose-1-phosphate **921-62-0**, 6-**Phosphogluconate 2641-81-8 4151-19-3**,

Ribulose-5-phosphate
RL: FORM (Formation, nonpreparative)
(formation of, in enzymic-fluorometric **adenylate cyclase** assay)

IT 317-34-0, Aminophylline
RL: ANST (Analytical study)
(in **cAMP** detn. in rat heart by enzymic-fluorometric method)

IT **9000-95-7, Apyrase 9026-93-1, Adenosine deaminase** 9027-73-0, 5'-Nucleotidase
RL: ANST (Analytical study)
(in endogenous adenine nucleotides removal in enzymic-fluorometric **adenylate cyclase** assay)

IT **53-57-6**, NADPH **56-73-5**, Glucose-6-phosphate **138-08-9**, Phosphoenolpyruvate 669-90-9, .alpha.-Ketogluconic acid **9001-40-5**, Glucose-6-phosphate dehydrogenase **9001-59-6**, Pyruvate kinase **9001-81-4**, Phosphoglucomutase **9005-79-2**, Glycogen, uses **9025-82-5**, Phosphodiesterase 9029-12-3, Glutamate dehydrogenase 9032-10-4, Glycogen phosphorylase a 9073-95-4, **6-Phosphogluconate dehydrogenase** 10139-18-1, Glucose-1,6-diphosphate 14265-44-2, Inorganic phosphate, uses 7439-95-4, Magnesium, uses
RL: ANST (Analytical study)
(in enzymic-fluorometric **adenylate cyclase** assay)

IT 328-50-7, .alpha.-Ketoglutarate 9000-90-2, .alpha.-Amylase **9001-37-0**, Glucose oxidase **9001-41-6**, Phosphoglucose isomerase **9001-51-8**, Hexokinase **9013-02-9**, Myokinase
RL: ANST (Analytical study)
(in enzymic-fluorometric **adenylate cyclase/ cAMP** assay)

IT **56-65-5**, 5'-ATP, miscellaneous 58-61-7D, Adenosine, nucleotides **58-64-0**, ADP, miscellaneous **61-19-8**, AMP, miscellaneous
RL: REM (Removal or disposal); PROC (Process)
(removal of, in enzymic-fluorometric **adenylate cyclase** assay)

L96 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2001 ACS
AN 1990:51510 HCAPLUS
DN 112:51510
TI A method to determine the **adenylate energy** charge of the Mytilus edulis by reversed-phase high performance liquid chromatography
AU Pijnenburg, A. M. C. M.; Steendijk, M. M.; Hofstraat, J. W.; Schreurs, W.
CS Tidal Waters Div., Minist. Transport Public Works, Middelburg, Neth.
SO Mar. Environ. Res. (1989), 27(2), 147-57
CODEN: MERSDW; ISSN: 0141-1136
DT Journal
LA English
CC **9-3 (Biochemical Methods)**
Section cross-reference(s): 12
AB A method for the detn. of the adenylate energy charge of the mussel M. edulis by making use of HPLC is described. The collection of the mussels is discussed and attention is paid to the extn. procedure. The sepn. of the adenine nucleotides is achieved with reversed-phase ion-pair chromatog. The purity of the peaks is confirmed by enzymic cleavage of the nucleotides with **alk. phosphatase**. A method is presented to det. the abs. concns. of the adenine nucleotides related to the ash-free wt. of the mussel.
ST mussel adenine nucleotide detn HPLC; liq chromatog adenine nucleotide detn Mytilus; energy charge adenylate detn HPLC mussel
IT Mytilus edulis
(adenylate energy charge detn. in, by HPLC)
IT **Chromatography, column and liquid**
(**high-performance, ion-pair**, reversed-phase, adenine nucleotide detn. in Mytilus edulis by, adenylate energy charge in relation to)
IT **56-65-5**, 5'-ATP, analysis 58-61-7, Adenosine, analysis

58-64-0, ADP, analysis **60-92-4**, **Cyclic AMP 61-19-8**, AMP, analysis **73-24-5D**, Adenine, nucleotides
RL: **ANT (Analyte)**; **ANST (Analytical study)** (detn. of, by HPLC in Mytilus edulis, energy charge detn. in relation to)

```
=> fil dpci
FILE 'DPCI' ENTERED AT 14:24:03 ON 21 DEC 2001
COPYRIGHT (C) 2001 DERWENT INFORMATION LTD

FILE LAST UPDATED: 14 DEC 2001            <20011214/UP>
MOST RECENT DERWENT DPCI UPDATE  200161
PATENTS CITATION INDEX, COVERS 1973 TO DATE

>>>  SDI'S MAY BE RUN ON EVERY UPDATE OR MONTHLY AS OF JUNE 2001.
     (EVERY UPDATE IS THE DEFAULT). FOR PRICING INFORMATION
     SEE HELP COST <<<

>>>  LEARNING FILE LDPCI AVAILABLE  <<<

=> d all tot


L100 ANSWER 1 OF 2  DPCI  COPYRIGHT 2001 DERWENT INFORMATION LTD
AN   2000-485025 [43]   DPCI
DNC  C2000-146072
TI   Measuring cAMP and adenylate cyclase activity in biological specimen
     involves removing non-cyclic adenine nucleotide and glucose-6-phosphoric
     acid using apyrase, alkaline phosphatase and adenosine deaminase.
DC   B04 D16
IN   SUGIYAMA, A
PA   (FUSO) FUSO YAKUHIN KOGYO KK; (FUSO) FUSO PHARM IND LTD
CYC  90
PI   JP 3059435    B1 20000704 (200043)*      18p    C12Q001-06       <--
     WO 2000055356 A1 20000921 (200048)  JA          C12Q001-06
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
            OA PT SD SE SL SZ TZ UG ZW
         W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE
            ES FI GB GD GE GH GM HR HU ID IL IN IS KE KG KR KZ LC LK LR LS LT
            LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ
            TM TR TT TZ UA UG US UZ VN YU ZA ZW
     JP 2000262296 A  20000926 (200055)       20p    C12Q001-06
     AU 2000029430 A  20001004 (200101)              C12Q001-06
ADT  JP 3059435 B1 JP 1999-73690 19990318; WO 2000055356 A1 WO 2000-JP1494
     20000313; JP 2000262296 A JP 1999-73690 19990318; AU 2000029430 A AU
     2000-29430 20000313
FDT  AU 2000029430 A Based on WO 200055356
PRAI JP 1999-73690    19990318
IC   ICM  C12Q001-06
     ICS  C12Q001-26; C12Q001-32; C12Q001-34; C12Q001-42; C12Q001-48;
          C12Q001-527; C12Q001-533
FS   CPI

CTCS CITATION COUNTERS
----------------------
PNC.DI    0              Cited Patents Count (by inventor)
PNC.DX    3              Cited Patents Count (by examiner)
IAC.DI    0              Cited Issuing Authority Count (by inventor)
IAC.DX    2              Cited Issuing Authority Count (by examiner)

PNC.GI    0              Citing Patents Count (by inventor)
PNC.GX    0              Citing Patents Count (by examiner)
IAC.GI    0              Citing Issuing Authority Count (by inventor)
IAC.GX    0              Citing Issuing Authority Count (by examiner)
```

CRC.I 0 Cited Literature References Count (by inventor)
CRC.X 0 Cited Literature References Count (by examiner)

CDP CITED PATENTS UPD: 20010227

Cited by Examiner

CITING PATENT	CAT	CITED PATENT	ACCNO
WO 200055356 A	Y	EP 781851	A2 1997-334907/31
	PA:	(KIKK) KIKKOMAN CORP	
	IN:	HATTORI, N; IMAI, K; MURAKAMI, S; NAKAJIMA, M; SAKAKIBARA, T; WATARAI, T; YAJITATE, K	
	A	EP 794260	A1 1997-450616/42
	PA:	(KIKK) KIKKOMAN CORP;	
	IN:	EISAKI, N; IMAI, K; MURAKAMI, S; NAKAJIMA, M; SAKAKIBARA, T	
	X	US 5618665	A 1994-264111/32
	PA:	(MINU) UNIV MINNESOTA	
	IN:	LURIE, K G; SUGIYAMA, A; WIEGN, P; WIEGM, P	

L100 ANSWER 2 OF 2 DPCI COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1994-264111 [32] DPCI
CR 1994-176261 [21]
DNN N1994-207729 DNC C1994-120908
TI Measuring adenylate cyclase and cAMP in samples - by removing other adenine nucleotide(s) and glucose-6-phosphate, converting cAMP to AMP and measuring AMP.
DC B04 D16 S03
IN LURIE, K G; SUGIYAMA, A; WIEGN, P; WIEGM, P
PA (MINU) UNIV MINNESOTA
CYC 20
PI WO 9417198 A1 19940804 (199432)* EN 61p C12Q001-00
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: CA CN JP
US 5618665 A 19970408 (199720) 24p C12Q001-00 <--
ADT WO 9417198 A1 WO 1994-US810 19940121; US 5618665 A CIP of US 1993-7847 19930122, US 1994-184040 19940120
FDT US 5618665 A CIP of US 5316907
PRAI US 1993-7847 19930122; US 1994-184040 19940120
IC C12N009-06; C12N009-14; C12Q001-26; C12Q001-42; C12Q001-44; G01N021-76; G01N033-48
FS CPI EPI

EXF EXAMINER'S FIELD OF SEARCH UPE: 19970828

NCL WO 9417198 A1 19940804
435/004; 436/063
US 5618665 A 19970408
435/019; 435/191; 435/195; 435/021; 435/025; 435/004; 435/963; 435/968; 436/172; 436/063; 436/805; 436/811

CTCS CITATION COUNTERS

PNC.DI	0	Cited Patents Count (by inventor)
PNC.DX	2	Cited Patents Count (by examiner)
IAC.DI	0	Cited Issuing Authority Count (by inventor)
IAC.DX	1	Cited Issuing Authority Count (by examiner)
PNC.GI	0	Citing Patents Count (by inventor)
PNC.GX	6	Citing Patents Count (by examiner)
IAC.GI	0	Citing Issuing Authority Count (by inventor)

IAC.GX 1 Citing Issuing Authority Count (by examiner)

CRC.I 25 Cited Literature References Count (by inventor)
CRC.X 6 Cited Literature References Count (by examiner)

CDP CITED PATENTS UPD: 19970828

Cited by Examiner

CITING PATENT	CAT	CITED PATENT	ACCNO
WO 9417198	A1	No Citations	
US 5618665	A	US 5312810	A 1988-353951/49
		PA: (GETH) GENENTECH INC; (UYME) UNIV MELBOURNE	
		IN: MARTIN, T J; SUVA, L J; WOOD, W I; SUYA, L J; WOOD, W L	
		US 5316907	A 1994-176261/21
		PA: (MINU) UNIV MINNESOTA	
		IN: LURIE, K G; WIEGN, P	

REN LITERATURE CITATIONS UPR: 19970828

Citations by Inventor

CITING PATENT	CITED LITERATURE
WO 9417198	A1 K.G. Lurie et al., J. Thorac. Cardiovasc. Surg., 86, 195 (1983)
WO 9417198	A1 M.R. Bristow et al., New Engl. J. Med., 307, 205 (1982)
WO 9417198	A1 Y. Salomon et al., as disclosed in Anal. Biochem., 58, 541 (1974)
WO 9417198	A1 Adv. Cyclic Nucleotide Res., 10, 35 (1979)
WO 9417198	A1 C.L. Johnson et al., Mol. Pharmacol., 16, 417 (1979)
WO 9417198	A1 O.H. Lowry et al., A Flexible System of Enzymatic Analysis, Harcourt Brace Jovanovich, NY (1972)
WO 9417198	A1 F.M. Matschinsky et al., J. Histochem. Cytochem., 16, 29 (1968)
WO 9417198	A1 E. Helmriech et al., Biochemistry, 52, 647 (1964); ibid., 51, 131 (1964)
WO 9417198	A1 M. Trus et al., Diabetes, 29, 1 (1980)
WO 9417198	A1 N.D. Goldberg et al., Anal. Biochem., 28, 523 (1969)
WO 9417198	A1 B. McL. Breckenridge, PNAS USA, 52, 1580 (1964)
WO 9417198	A1 Weign et al., Anal. Biochem., 208, 217 (1993)
WO 9417198	A1 Lowry et al., A Flexible System of Enzymatic Analysis, Harcourt Brace Jovanovich, New York (1972)
WO 9417198	A1 Wulff et al., Methods of Enzymatic Analysis, Bergmeyer H.U., eds., VCH (1985)
WO 9417198	A1 Y. Salomon et al., in Anal. Biochem., 58, 541 (1974)
WO 9417198	A1 K. Lurie et al., Ann. J. Physiol., 253, H662-H670 (1987)
WO 9417198	A1 E. Heimrich et al., Biochemistry, 52, 131 (1964)
WO 9417198	A1 Meinrich et al. and E. Helmrich et al., Biochemistry, 52, 647 (1964)
WO 9417198	A1 J. Thorac. Cardiovasc. Surg., 86, 195 (1983)
WO 9417198	A1 Bourne et al., Nature, 348, 125 (1990)
WO 9417198	A1 M.M. Bradford et al., Anal. Biochem., 72, 248 (1976)
WO 9417198	A1 Simpson et al., Cir. Res., 51, 787-801 (1982)
WO 9417198	A1 Rocha-Singh et al., J. Clin. Invest., 88, 204-213 (1991)
WO 9417198	A1 Rocha-Singh et al., J. Clin. Invest., 88, 706-766 (1991)
WO 9417198	A1 Hamada et al., J. Biol. Chem., 260, 11595 (1985)

Citations by Examiner

CITING PATENT	CAT	CITED LITERATURE
US 5618665	A	Proc. Natl. Acad. Sci. USA, Vol. 78, No. 4, issued Apr., 1981. Rossomando et al., "Formycin 5'-triphosphate, a Fluorescent Analog of ATP, as a Substrate for Adenylate Cyclase", pp. 2278-2282.
US 5618665	A	Journal of Chromatography, vol. 400, issued 1987, Yoshioka et al., "Analyses of Adenosine and Adenine Nucleotides inBiological Materials by Fluorescence Reaction-High-Performance Liquid Chromatography", pp. 133-144.
US 5618665	A	Journal of Cyclic Nucleotide Research, vol. 7, No. 1, issed 1981, Wojcik et al., "A Simple Fluorometric Method of cAMP" Application to Studies of Brain Adenylate Cylcase Activity, pp. 27-35.
WO 9417198	A1 A	Proc. Natl. Acad. Sci. USA, Volume 78. No. 4, issued April 1981, Rossomando et al, "Formycin 5'-triphosphate, a fluorescent analog of ATP, as a substrate for adenylate cyclase", pages 2278-2282
WO 9417198	A1 A	Journal of Chromatography, Volume 400, issued 1987, Yoshioka et al, "Analyses of Adenosine and Adenine Nucleotides in Biological Materials By Fluorescence Reaction-High-Performance Liquid Chromatography", pages 133-141
WO 9417198	A1 A	Journal of Cyclic Nucleotide Research, Volume 7, No. 1, issued 1981, Wojcik et al, "A Simple Fluorometric Method for cAMP: Application to Studies of Brain Adenylate Cyclase Activity", pages 27-35

CGP CITING PATENTS UPG: 20010913

Cited by Examiner

CITED PATENT	CAT	CITING PATENT	ACCNO
US 5618665	A	US 5912146	A 1998-254407/21
	PA:	(SHMA) SHIMADZU CORP	
	IN:	NISHIMURA, N; YOSHIDA, R	
WO 9417198	A1	US 5891702	A 1997-334907/31
	PA:	(KIKK) KIKKOMAN CORP	
	IN:	HATTORI, N; IMAI, K; MURAKAMI, S; NAKAJIMA, M; SAKAKIBARA, T; WATARAI, T; YAJITATE, K	
		US 6004767	A 1998-377666/31
	PA:	(BTGI-N) BTG INT LTD; (LUMI-N) LUMITECH LTD; (BRTE-N) BRITISH TECHNOLOGY GROUP LTD	
	IN:	CROUCH, S P M; SLATER, K J; SOWTER, D P	
		US 6200767	B1 1997-334907/31
	PA:	(KIKK) KIKKOMAN CORP	
	IN:	HATTORI, N; IMAI, K; MURAKAMI, S; NAKAJIMA, M; SAKAKIBARA, T; WATARAI, T; YAJITATE, K	
		US 6210891	B1 1998-271708/21
	PA:	(DZIE-I) DZIEGLEWSKA H E; (PYRO-N) PYROSEQUENCING AB	
	IN:	NYREN, P; RONAGHI, M; UHLEN, M	
		US 6258568	B1 1998-377668/31
	PA:	(DZIE-I) DZIEGLEWSKA H E; (PYRO-N) PYROSEQUENCING AB	
	IN:	NYREN, P	

=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 14:24:31 ON 21 DEC 2001
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

FILE COVERS 1907 - 21 Dec 2001 VOL 135 ISS 26
FILE LAST UPDATED: 20 Dec 2001 (20011220/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

This file supports REGlstRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

HCAplus now provides online access to patents and literature covered in CA from 1907 to the present. Bibliographic information and abstracts were added in 2001 for over 3.8 million records from 1907-1966.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d his

(FILE 'HOME' ENTERED AT 12:55:22 ON 21 DEC 2001)
SET COST OFF

FILE 'HCAPLUS' ENTERED AT 12:55:34 ON 21 DEC 2001
E SUGIYAMA A/AU
L1 216 S E3,E24,E27
E ATSUSHI/AU
L2 26105 S ADENYLATE CYCLASE
L3 70168 S CAMP
L4 387 S C AMP
L5 30205 S CYCLIC AMP

FILE 'REGISTRY' ENTERED AT 12:58:28 ON 21 DEC 2001
L6 1 S 60-92-4
L7 1 S 9012-42-4
E ATP/CN
L8 1 S E7
E ADP/CN
L9 1 S E6
E AMP/CN
L10 1 S E8
E GLUCOSE-6-PHOSPHATE/CN
E GLUCOSE 6-PHOSPHATE/CN
L11 1 S E3
E A[URASECM
E APYRASE/CN
L12 1 S E3
E ALKALINE PHOSPHATASE/CN
L13 1 S E3
E ADENOSINE DEAMINASE/CN
L14 3 S E3
E GLUCOSE OXIDSE/CN
E GLUCOSE OXIDASE/CN
L15 1 S E3

```
                E GLYCOGEN PHOSPHORYLASE/CN
L16           1 S E3
                E GLYCOGEN/CN
L17           1 S E3
                E PHOSPHODIESTERASE/CN
L18           1 S E3
L19           5 S E36,E39,E40,E41,E44,E47
                E EDTA/CN
L20           1 S E3
                SEL RN
L21         420 S E1/CRN
                E PHOSPHORIC ACID/CN
L22           1 S E3
                E PHOSPHOGLUCOMUTASE/CN
L23           1 S E3
                E GLUCOSE 1-PHOSPHATE/CN
                E GLUCOSE-1-PHOSPHATE/CN
                E GLUCOSE PHOSPHATE/CN
L24           1 S E3
L25          44 S C6H13O9P/MF AND GLUCOSE AND PHOSPHATE
L26           8 S L25 NOT 6
L27           4 S L26 NOT (2 OR 3 OR LABELED OR 32P)
                E GLUCOSE 6-PHOSPHATE DEHYDROGENSAE/CN
                E GLUCOSE-6-PHOSPHATE DEHYDROGENSAE/CN
                E GLUCOSE-6-PHOSPHATE DEHYDROGENASE/CN
                E GLUCOSE 6-PHOSPHATE DEHYDROGENASE/CN
L28           2 S E3-E5
                E 6-PHOSPHOGLUCONOLACTONE/CN
                E PHOSPHOGLUCONOLACTONE/CN
                E PHOSPHOGLUCONOLACTONE
                E NADP/CN
L29           1 S E3
                E NADPH/CN
L30           1 S E3
                E 6-PHOSPHOGLUCONATE/CN
                E 6 PHOSPHOGLUCONATE/CN
                E RIBULOSE 5-PHOSPHATE/CN
L31           1 S E3
                E FRUCTOSE 6-PHOSPHATE/CN
L32           1 S E3
                E CATP/CN
                E CYCLIC ATP/CN
                E MYOKINASE/CN
L33           1 S E3
                E PYRUVATE KINASE/CN
L34           1 S E3
                E HEXOKINASE/CN
L35           1 S E3
                E PHOSPHOGLUCOSE ISOMERASE/CN
L36           1 S E3
                E PHOSPHOENOLPYRUVIC ACID/CN
L37           1 S E3

     FILE 'HCAPLUS' ENTERED AT 13:33:19 ON 21 DEC 2001
L38       51446 S L6
L39       18505 S L7
L40          16 S L1 AND L2-L5,L38,L39
L41        5731 S ADENYLYL CYCLASE
L42           5 S L1 AND L41
L43          16 S L40,L42
L44         115 S ADENYLYLCYCLASE
L45           4 S L1 AND L44
L46          16 S L43,L45

     FILE 'REGISTRY' ENTERED AT 13:36:43 ON 21 DEC 2001
L47           1 S 73-24-5
```

```
     FILE 'HCAPLUS' ENTERED AT 13:37:08 ON 21 DEC 2001
L48       82872 S L8,L9,L10,L11,L47
L49           4 S L1 AND L48
L50       31578 S L12,L13,L14
L51           4 S L46,L49 AND L50
L52          11 S L46,L51 AND (9 OR 7)/SC,SX
L53           4 S L1 AND L15,L16,L17,L18,L19,L20,L21,L22,L23,L24,L27,L28,L29,L3
L54           3 S L53 AND L46
L55           3 S L53 AND L52
L56          31 S 6 PHOSPHOGLUCONOLACTONE
L57        4209 S 6 PHOSPHOGLUCONATE
L58           1 S 6 PHOSPHOGLUCONATE DEHYDROGEANSE
L59        3350 S 6 PHOSPHOGLUCONATE DEHYDROGENASE

     FILE 'REGISTRY' ENTERED AT 13:47:01 ON 21 DEC 2001
L60           2 S 2641-81-8 OR 97323-75-6
L61           1 S 9001-82-5

     FILE 'HCAPLUS' ENTERED AT 13:50:50 ON 21 DEC 2001
L62         475 S L57 NOT DEHYDROGENASE
L63         362 S L62 NOT (KETO OR ALDOLASE)

     FILE 'REGISTRY' ENTERED AT 13:52:48 ON 21 DEC 2001
L64           1 S 921-62-0

     FILE 'HCAPLUS' ENTERED AT 14:00:07 ON 21 DEC 2001
L65           1 S L1 AND L60,L61,L64
L66          12 S L52-L55,L65
L67           0 S L1 AND CATP
L68           0 S L1 AND (C OR CYCLIC)()ATP
L69           9 S L1 AND ATP

     FILE 'REGISTRY' ENTERED AT 14:03:14 ON 21 DEC 2001
L70           1 S 56-65-5
L71           1 S L8 OR L70

     FILE 'HCAPLUS' ENTERED AT 14:03:51 ON 21 DEC 2001
L72           3 S L71 AND L1
L73          12 S L69,L72,L66
L74          11 S L73 AND (9 OR 7)/SC,SX
L75           6 S L46,L49,L51-L55,L66,L69,L72-L73 NOT L74
L76           1 S L75 AND (MEASUREMENT AND ADENYL?)/TI
L77          12 S L74,L76

     FILE 'HCAPLUS' ENTERED AT 14:06:55 ON 21 DEC 2001
L78      103877 S L2-L5,L38,L39,L41,L44
L79        1587 S L78 AND (L12 OR L13 OR L14 OR APYRASE OR ALKALINE PHOSPHATASE
L80          34 S L79 AND ANALYSIS+NT/CT
L81          82 S L79 AND (BIOCHEM?(L)METHOD?)/SC,SX
L82          95 S L80,L81
L83           1 S L47(L)REM/RL AND L82
L84           2 S L47(L)PROC/RL AND L82
L85           1 S L83,L84 NOT L77
L86         724 S (L6 OR L7)(L)ANT/RL
L87        1043 S (L6 OR L7)(L)ANST/RL
L88          42 S L79 AND L86,L87
L89           8 S L88 AND L47
L90           6 S L89 NOT L77
L91           1 S L90 AND ADENYLATE ENERGY/TI
L92          99 S L82,L88 NOT L77
                E US5316907/PN
L93           3 S E3
L94           2 S L93 NOT L77
L95           4 S L91,L93,L94
L96           4 S L95 AND L38-L46,L48-L59,L62,L63,L65-L69,L72-L77,L78-L95,L6-L3
```

```
L97             4 S L77,L96 AND P/DT

    FILE 'DPCI' ENTERED AT 14:23:09 ON 21 DEC 2001
L98             1 S (US5618665 OR EP1164199)/PN
                  E JP3059435/PN
L99             1 S E4
L100            2 S L98,L99

     FILE 'DPCI' ENTERED AT 14:24:03 ON 21 DEC 2001

     FILE 'HCAPLUS' ENTERED AT 14:24:31 ON 21 DEC 2001
L101            3 S WO9417198/PN
L102            0 S L101 NOT  L77,L97
```

L7 ANSWER 2 OF 2 WPIDS (C) 2003 THOMSON DERWENT
AN 1994-264111 [32] WPIDS
CR 1994-176261 [21]
DNN N1994-207729 DNC C1994-120908
TI Measuring adenylate cyclase and cAMP in samples - by removing other adenine nucleotide(s) and glucose-6-phosphate, converting cAMP to AMP and measuring AMP.
DC B04 D16 S03
IN LURIE, K G; **SUGIYAMA, A**; WIEGN, P; WIEGM, P
PA (MINU) UNIV MINNESOTA
CYC 20
PI WO 9417198 A1 19940804 (199432)* EN 61p
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: CA CN JP
US 5618665 A 19970408 (199720) 24p
ADT WO 9417198 A1 WO 1994-US810 19940121; US 5618665 A CIP of US 1993-7847 19930122, US 1994-184040 19940120
FDT US 5618665 A CIP of US 5316907
PRAI US 1993-7847 19930122; US 1994-184040 19940120
AB WO 9417198 A UPAB: 19940928
A method of measuring adenylate cyclase (AC) activity in a sample of physiological material comprises (a) combining a sample of physiological material comprising (i) cAMP produced by endogenous AC, (ii) other endogenous adenine nucleotides selected from ATP, AMP and ADP and (iii) glucose-6-phosphate (G-6-P), with amts. of **apyrase**, 5'-nucleotidase and adenosine deaminase to enzymatically eliminate the other endogenous adenine nucleotides in the sample and with an amt. of alkaline phosphatase (AP) to enzymatically eliminate the G-6-P in the sample, (b) enzymatically converting the cAMP to AMP and (c) measuring the amt. of AMP without the use of radioactive reagents, the amt. providing a measure of the amt. of cAMP and AC in the sample.

USE/ADVANTAGE - The method is used to measure AC and cAMP in tissues and fluids, e.g. to assess cell viability, endocrine-hormonal axis function, phosphodiesterase activity and the activity of signal transduction proteins. The method is sensitive enough to measure cAMP in small biopsy samples weighing less than 0.1mg and can be adapted to measure less than 1 fmol cAMP/sample.

Dwg.0/13

=> d bib ab 1-7

L4 ANSWER 1 OF 7 CA COPYRIGHT 2003 ACS
AN 133:132109 CA
TI Enzymatic and fluorometric assay for measuring cAMP and adenylate cyclase
IN Sugiyama, Atsushi
PA Fuso Pharmaceutical Industries, Ltd., Japan
SO Jpn. Tokkyo Koho, 18 pp.
CODEN: JTXXFF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 3059435	B1	20000704	JP 1999-73690	19990318
	JP 2000262296	A2	20000926		
	WO 2000055356	A1	20000921	WO 2000-JP1494	20000313
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 1164199	A1	20011219	EP 2000-908024	20000313
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRAI	JP 1999-73690	A	19990318		
	WO 2000-JP1494	W	20000313		

AB A simple and highly sensitive enzymic fluorescence quantitation assay method is provided for rapidly measuring cAMP and adenylate cyclase in a biol. sample (e.g., body fluid) contg. intrinsic non-cyclic adenine nucleotides without using radioactive reagents. The intrinsic non-cyclic adenine nucleotides (e.g., ATP, ADP, AMP) and glucose-6-phosphate present in the sample are eliminated by adding sufficient amts. of **apyrase**, **adenosine deaminase** and **alk. phosphatase**. CAMP is enzymically transformed to AMP with phosphodiesterase. Then, the amt. of AMP is fluorometrically detd. as NADPH after a series of enzymic reactions without using radioactive reagents.

L4 ANSWER 2 OF 7 CA COPYRIGHT 2003 ACS
AN 127:80554 CA
TI ATP eliminator and process for determining biological cells
IN Sakakibara, Tasuya; Murakami, Seiji; Hattori, Noriaki; Yajitate, Keiko; Watarai, Teruo; Nakajima, Motoo; Imai, Kazuhiro
PA Kikkoman Corporation, Japan
SO Eur. Pat. Appl., 48 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 781851	A2	19970702	EP 1996-120896	19961227
	EP 781851	A3	19980429		
	R: DE, FR, GB, NL				
	US 5891702	A	19990406	US 1996-780161	19961226
	US 6200767	B1	20010313	US 1999-227108	19990105
PRAI	JP 1995-352423	A	19951228		
	US 1996-780161	A3	19961226		

AB The present invention provides a process for eliminating effectively ATP in a sample by using adenosine phosphate deaminase alone or in combination with at least one enzyme selected from the group consisting of **apyrase**, **alk. phosphatase**, acid phosphatase, hexokinase and ATPase, a process for detg. biol. cells contained in foods and beverages in a convenient and precise manner by a bioluminescence method, and a reagent for the anal. In particular, the present invention relates to the evaluation of the biol. contamination of samples such as foods and drinks or the half-products or materials thereof by treating the samples with the ATP eliminator and then measuring ATP in contaminant microorganism cells contained in the samples by the bioluminescence method.

L4 ANSWER 3 OF 7 CA COPYRIGHT 2003 ACS
AN 127:14486 CA
TI Extracellular purine metabolism
AU Zimmermann, H.
CS Biozentrum der J.W. Goethe-University, Frankfurt am Main, D-60439, Germany
SO Drug Development Research (1997), Volume Date 1996, 39(3/4), 337-352
CODEN: DDREDK; ISSN: 0272-4391
PB Wiley-Liss
DT Journal; General Review
LA English
AB A review with 156 refs. A variety of nucleotides and the nucleoside adenosine can act as extracellular signaling substances. Their function is terminated by extracellular degrdn. via surface-located enzymes. The breakdown products may be recycled. Recent developments in the cellular and mol. biol. of enzymes involved in extracellular purine metab., including diadenosine polyphosphate hydrolase, ATP-diphosphohydrolase (**apyrase**), nucleotide pyrophosphatase, 5'-nucleotidase, **alk** . **phosphatase**, NAD-glycohydrolase, and **adenosine deaminase** are discussed. The potential of the surface-located enzymes for ADP-ribosylation and phosphorylation of extracellular proteins is also briefly discussed.

L4 ANSWER 4 OF 7 CA COPYRIGHT 2003 ACS
AN 123:191872 CA
TI Enzymic fluorometric assay for adenylyl cyclase activity. Comparison with radioimmunoassay and original [.alpha.-32P]ATP Salomon method
AU Sugiyama, Atsushi; Lurie, Keith G.
CS Dep. Pharmacology, Yamanashi Medical Univ., Tamaho, 409-38, Japan
SO Yamanashi Ika Daigaku Zasshi (1995), 10(1), 11-19
CODEN: YIDZE8; ISSN: 0912-0025
PB Yamanashi Ika Daigaku Igakkai
DT Journal
LA English
AB An enzymic fluorometric assay was developed to assess the adenylyl cyclase activity in membrane prepns. The assay consists of 2 parts: (1) pharmacol. stimulation or inhibition of adenylyl cyclase, and (2) measurement of newly synthesized cAMP. The crit. step of cAMP measurement is the initial enzymic destruction of noncyclic adenine nucleotides and phosphorylated metabolites, which can interfere with later assay steps. This is accomplished using a combination of **apyrase**, 5'-nucleotidase, **adenosine deaminase**, and **alk** . **phosphatase**. The diester linkage of cAMP is then cleaved and the newly generated AMP is measured fluorometrically. The adenylyl cyclase activity was measured in rabbit cardiac membrane prepns. and compared with a RIA and original [.alpha.-32P]ATP Salomon assay (Y. Salomon et al., 1979). With the enzymic fluorometric assay, the basal activity and that after exposure to isoproterenol (10-7 and 10-6 M), NaF (10-2 M), guanylyl-5'-imidodiphosphate (10-4 M), carbachol (10-6 M) and adenosine (10-3 M) were 67, 88, 147, 2972, 117, 56, and 34 (cAMP prodn. pmol/mg protein/min), resp. The total assay duration, including sample reading procedure, was 6.5 h. The results were virtually identical to

those obtained using the RIA or Salomon methods. It was concluded that this new assay is highly sensitive, safe, versatile, inexpensive, and has multiple potential applications.

L4 ANSWER 5 OF 7 CA COPYRIGHT 2003 ACS
AN 122:50485 CA
TI Enzymic fluorometric assay for tissue cAMP
AU Sugiyama, Atsushi; Wiegn, Phi; McKnite, Scott; Lurie, Keith G.
CS Department Medicine, University Minnesota, Minneapolis, MN, 55455, USA
SO Journal of Clinical Laboratory Analysis (1994), 8(6), 437-42
CODEN: JCANEM; ISSN: 0887-8013
PB Wiley-Liss
DT Journal
LA English
AB CAMP is commonly measured using either immunoassay or high-performance liq. chromatog. The current methods are sensitive but may lack versatility and be expensive; also, radioactivity is potentially harmful to the operator and environment. Given these concerns, the authors developed a highly sensitive enzymic fluorometric assay for cAMP. The method consists of five steps: (1) destruction of interfering compds. with **apyrase**, 5' nucleotidase, **adenosine deaminase**, and **alk. phosphatase**; (2) conversion of cAMP to AMP; (3) conversion of AMP to ATP; (4) amplification of ATP by ATP-ADP cycling; and (5) fluorometric measurement of resultant NADPH. CAMP was measured in male Sprague Dawley rats anesthetized with pentobarbital. Stimulated rats received isoproterenol (16 .mu.g/kg, s.q.), and aminophylline (20 mg/kg, s.q.), whereas controls received no addnl. drug. With the enzymic fluorometric assay, cAMP content in heart, liver, and kidney (pmol/mg wet wt.) was 0.34, 0.33, and 0.92 in the control group and 0.77, 0.66, and 1.53 in the stimulated group, resp. The total assay duration including sample reading procedure varied at 4.5-9.5 h, depending on its sensitivity. CAMP from the same samples was measured using a com. available enzyme immunoassay kit and was very similar to the enzymic fluorometric assay. The authors conclude that this new assay is sensitive, safe, versatile, and inexpensive and can be used to measure cAMP in multiple types of tissue, including biopsy samples weighing <200 .mu.g.

L4 ANSWER 6 OF 7 CA COPYRIGHT 2003 ACS
AN 121:173937 CA
TI Enzymic fluorometric assay for adenylate cyclase
IN Lurie, Keith G.; Wiegm, Phi
PA University of Minnesota, USA
SO PCT Int. Appl., 61 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9417198	A1	19940804	WO 1994-US810	19940121
	W: CA, CN, JP				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 5316907	A	19940531	US 1993-7847	19930122
	US 5618665	A	19970408	US 1994-184040	19940121
PRAI	US 1993-7847		19930122		
	US 1994-184040		19940120		

AB A method for measuring adenylate cyclase (AC) in a sample of physiol. material which does not employ radioactive reagents is provided. The method is more sensitive and simpler to perform than prior art assays. The method comprises (a) providing a physiol. sample contg. cAMP produced by endogenous AC, and other endogenous adenine nucleotides selected from the group consisting of ATP, AMP, ADP and mixts. thereof; (b) combining the sample with effective amts. of **apyrase**, 5'-nucleotidase, so

as to enzymically eliminate said other endogenous adenine nucleotides and an amt. of **alk. phosphatase** to eliminate the glucose-6-phosphate in the sample; (c) enzymically converting the cAMP into AMP; and (d) measuring the amt. of AMP, said amt. providing a measure of the amt. of cAMP and AC in the sample. The AMP may be used to stimulate enzymic prodn. of NADPH, which may be measured fluorometrically.

L4 ANSWER 7 OF 7 CA COPYRIGHT 2003 ACS
AN 120:239327 CA
TI An enzymic fluorometric assay for adenosine 3':5'-monophosphate
AU Sugiyama, Atsushi; Lurie, Keith G.
CS Dep. Med., Univ. Minnesota, Minneapolis, MN, 55455, USA
SO Analytical Biochemistry (1994), 218(1), 20-5
CODEN: ANBCA2; ISSN: 0003-2697
DT Journal
LA English
AB An enzymic assay for adenosine 3':5'-monophosphate (cAMP) is described. Current measurement techniques can be expensive, time-consuming, and lack versatility. The crit. step of this new method is the enzymic destruction of endogenous purinergic noncyclic nucleotides. The diester linkage of cAMP is then cleaved and AMP is phosphorylated to ATP. Newly formed ATP is amplified using ATP-ADP cycling reactions and NADPH is measured fluorometrically. The cAMP was measured in neonatal rat ventricular myocytes cultured on std. 100-mm dishes and treated with 2 .mu.M 3-isobutyl-1-methylxanthine .+-. 1 .mu.M isoproterenol. When the enzymic fluorometric assay was compared with an immunocolorimetric assay and a RIA, cAMP content (pmol/plate mean + SE) was 124.3 .+-. 6.7, 130.6 .+-. 3.9, and 144.0 .+-. 4.4 without isoproterenol and 656.4 .+-. 23.5, 659.5 .+-. 54.1, and 677.1 .+-. 48.9 with isoproterenol, resp. The std. curve with the enzymic fluorometric assay is linear, in contrast to the curves of the nonlinear immunocolorimetric assay and RIA. The enzymic fluorometric assay can be used to detect <20 fmol of cAMP/sample and can be adapted to measure <1 fmol/sample. It can also be used to measure the activities of adenylate cyclase and phosphodiesterase. In summary, this enzymic cAMP assay is sensitive, safe, versatile, and inexpensive and has multiple potential applications.

=> d ind 7

L4 ANSWER 7 OF 7 CA COPYRIGHT 2003 ACS
CC 9-2 (Biochemical Methods)
Section cross-reference(s): 7
ST cAMP enzymic fluorometric assay
IT Heart, composition
(ventricle, cAMP of, enzymic fluorometric assay for)
IT 60-92-4, CAMP
RL: ANT (Analyte); ANST (Analytical study)
(detn. of, enzymic fluorometric assay for)
IT 9000-95-7, **Apyrase** 9001-40-5, Glucose-6-phosphate dehydrogenase 9001-41-6, Phosphoglucoisomerase 9001-51-8, Hexokinase 9001-59-6, Pyruvate kinase 9001-78-9, **Alkaline phosphatase** 9013-02-9, Myokinase 9025-82-5, Phosphodiesterase 9026-93-1, **Adenosine deaminase** 9027-73-0, 5'-Nucleotidase
RL: ANST (Analytical study)
(in cAMP detn. by enzymic fluorometric assay)

=> d ind 1

L4 ANSWER 1 OF 7 CA COPYRIGHT 2003 ACS
IC ICM C12Q001-06
ICS C12Q001-34; C12Q001-42; C12Q001-48

CC 9-2 (Biochemical Methods)
Section cross-reference(s): 7
ST cAMP adenylate cyclase enzymic analysis fluorometry
IT Analysis
(enzymic anal.; enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT Body fluid
Chelating agents
Fluorometry
Mammal (Mammalia)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 60-92-4, CAMP
RL: ANT (Analyte); ANST (Analytical study)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 9012-42-4, Adenylate cyclase
RL: ANT (Analyte); BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 53-57-6, NADPH
RL: ANT (Analyte); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 56-65-5, 5'-ATP, analysis 61-19-8, 5'-AMP, analysis
RL: ANT (Analyte); PEP (Physical, engineering or chemical process); REM (Removal or disposal); ANST (Analytical study); PROC (Process)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 53-59-8, NADP+ 9000-95-7, **Apyrase** 9001-37-0, Glucose oxidase 9001-40-5, Glucose-6-phosphate dehydrogenase 9001-51-8, Hexokinase 9001-59-6, Pyruvate kinase 9001-78-9, **Alkaline phosphatase** 9001-81-4, Phosphoglucomutase 9001-82-5, 6-Phosphogluconate dehydrogenase 9013-02-9, Myokinase 9014-00-0, Luciferase 9025-82-5, Phosphodiesterase 9026-93-1, Deaminase, adenosine 9027-73-0, 5'-Nucleotidase 9035-74-9, Glycogen phosphorylase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 9005-79-2, Glycogen, uses
RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); REM (Removal or disposal); ANST (Analytical study); PROC (Process); USES (Uses)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 60-00-4, EDTA, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 58-64-0, 5'-ADP, processes
RL: PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)
IT 73-24-5D, Adenine, nucleotides
RL: REM (Removal or disposal); PROC (Process)
(non-cyclic; enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

=>

L4 ANSWER 5 OF 7 CA COPYRIGHT 2003 ACS
AN 122:50485 CA
TI Enzymic fluorometric assay for tissue cAMP
AU Sugiyama, Atsushi; Wiegn, Phi; McKnite, Scott; Lurie, Keith G.
CS Department Medicine, University Minnesota, Minneapolis, MN, 55455, USA
SO Journal of Clinical Laboratory Analysis (1994), 8(6), 437-42
CODEN: JCANEM; ISSN: 0887-8013
PB Wiley-Liss
DT Journal
LA English
AB CAMP is commonly measured using either immunoassay or high-performance liq. chromatog. The current methods are sensitive but may lack versatility and be expensive; also, radioactivity is potentially harmful to the operator and environment. Given these concerns, the authors developed a highly sensitive enzymic fluorometric assay for cAMP. The method consists of five steps: (1) destruction of interfering compds. with **apyrase**, 5' nucleotidase, **adenosine deaminase**, and **alk. phosphatase**; (2) conversion of cAMP to AMP; (3) conversion of AMP to ATP; (4) amplification of ATP by ATP-ADP cycling; and (5) fluorometric measurement of resultant NADPH. CAMP was measured in male Sprague Dawley rats anesthetized with pentobarbital. Stimulated rats received isoproterenol (16 .mu.g/kg, s.q.), and aminophylline (20 mg/kg, s.q.), whereas controls received no addnl. drug. With the enzymic fluorometric assay, cAMP content in heart, liver, and kidney (pmol/mg wet wt.) was 0.34, 0.33, and 0.92 in the control group and 0.77, 0.66, and 1.53 in the stimulated group, resp. The total assay duration including sample reading procedure varied at 4.5-9.5 h, depending on its sensitivity. CAMP from the same samples was measured using a com. available enzyme immunoassay kit and was very similar to the enzymic fluorometric assay. The authors conclude that this new assay is sensitive, safe, versatile, and inexpensive and can be used to measure cAMP in multiple types of tissue, including biopsy samples weighing <200 .mu.g.

L9 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS
RN **9036-21-9** REGISTRY
CN Phosphodiesterase, adenosine cyclic 3',5'-phosphate (9CI) (CA INDEX NAME)
OTHER NAMES:
CN 3',5'-Adenyl phosphodiesterase
CN 3',5'-AMP phosphodiesterase
CN 3',5'-Cyclic AMP phosphodiesterase
CN Adenosine 3',5'-monophosphate phosphodiesterase
CN Adenosine 3',5'-monophosphate phosphohydrolase
CN Adenosine 3',5'-phosphate phosphodiesterase
CN Adenosine cyclic 3',5'-monophosphate phosphodiesterase
CN Adenosine cyclic 3',5'-phosphate phosphodiesterase
CN AMP cyclic phosphodiesterase
CN Calcium-calmodulin-independent cAMP phosphodiesterase
CN Calmodulin-dependent cAMP phosphodiesterase
CN CAMP phosphodiesterase
CN cAMP-specific phosphodiesterase
CN cGMP-inhibited cyclic nucleotide phosphodiesterase
CN cGMP-inhibited phosphodiesterase
CN Cyclic 3,5'-adenosine monophosphate phosphodiesterase
CN Cyclic adenosine 3',5'-phosphate phosphodiesterase
CN Cyclic adenosine monophosphate phosphodiesterase
CN Cyclic adenosine-3',5'-monophosphate phosphodiesterase
CN Cyclic adenylate phosphodiesterase
CN Cyclic AMP diesterase
CN Cyclic AMP phosphodiesterase
CN Cyclic AMP-dependent phosphodiesterase
CN Cyclic GMP-inhibited phosphodiesterase
CN Cyclic nucleotide phosphodiesterase
CN Cyclic nucleotide phosphodiesterase 4
CN PDE III
CN PDE IV
CN PDE3
CN PDE4
CN PDE7
CN PDE8
CN Phosphodiesterase 3
CN Phosphodiesterase 3B
CN Phosphodiesterase 4
CN Phosphodiesterase 4A
CN Phosphodiesterase 4B
CN Phosphodiesterase 7
CN Phosphodiesterase 8
CN Phosphodiesterase cAMP
CN Phosphodiesterase III
CN Phosphodiesterase IV
CN Phosphodiesterase PDE8A
CN Phosphodiesterase type 4
CN Phosphodiesterase VII
CN Rolipram-sensitive cAMP-specific phosphodiesterase
CN Type III Phosphodiesterase
MF Unspecified
CI MAN
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CAPLUS, CASREACT, CEN, CIN, EMBASE, IFICDB, IFIPAT, IFIUDB, PROMT, TOXCENTER, USPAT2, USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
4892 REFERENCES IN FILE CA (1957 TO DATE)
13 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
4900 REFERENCES IN FILE CAPLUS (1957 TO DATE)

1 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS
RN 9000-95-7 REGISTRY
CN **Apyrase (9CI)** (CA INDEX NAME)
OTHER NAMES:
CN ATP diphosphohydrolase
CN ATPDase
CN E.C. 3.6.1.5
CN Ectonucleoside triphosphate diphosphohydrolase
CN Nucleoside triphosphate diphosphohydrolase
CN Somase
MF Unspecified
CI MAN
LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CAPLUS, CHEMCATS, CHEMLIST, DDFU, DRUGU, EMBASE, MRCK*, PROMT, TOXCENTER, USPAT2, USPATFULL
(*File contains numerically searchable property data)
Other Sources: EINECS**
(**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
706 REFERENCES IN FILE CA (1957 TO DATE)
6 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
706 REFERENCES IN FILE CAPLUS (1957 TO DATE)

=> s adenosine deaminase/cn
L2 3 ADENOSINE DEAMINASE/CN

=> d cn 1-3

L2 ANSWER 1 OF 3 REGISTRY COPYRIGHT 2003 ACS
CN Deaminase, transfer ribonucleate adenosine (9CI) (CA INDEX NAME)
OTHER NAMES:
CN ADAT deaminase
CN **Adenosine deaminase**
CN tRNA adenosine deaminase

L2 ANSWER 2 OF 3 REGISTRY COPYRIGHT 2003 ACS
CN Deaminase, double-stranded ribonucleate adenosine (9CI) (CA INDEX NAME)
OTHER NAMES:
CN ADAR deaminase
CN ADAR1
CN ADAR2
CN **Adenosine deaminase**
CN Deaminase, adenosine, RNA-dependent
CN Double-stranded RNA adenine deaminase
CN Double-stranded RNA adenosine deaminase
CN Double-stranded RNA-specific adenosine deaminase
CN Double-stranded RNA-specific editase 1
CN DRADA

L2 ANSWER 3 OF 3 REGISTRY COPYRIGHT 2003 ACS
CN Deaminase, adenosine (9CI) (CA INDEX NAME)
OTHER NAMES:
CN Adenosine aminohydrolase
CN **Adenosine deaminase**
CN Deoxyadenosine deaminase
CN E.C. 3.5.4.4

=> d 1-3

L2 ANSWER 1 OF 3 REGISTRY COPYRIGHT 2003 ACS
RN 214692-96-3 REGISTRY

CN Deaminase, transfer ribonucleate adenosine (9CI) (CA INDEX NAME)
OTHER NAMES:
CN ADAT deaminase
CN **Adenosine deaminase**
CN tRNA adenosine deaminase
MF Unspecified
CI MAN
SR CA
LC STN Files: BIOSIS, CA, CAPLUS, TOXCENTER

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
9 REFERENCES IN FILE CA (1957 TO DATE)
9 REFERENCES IN FILE CAPLUS (1957 TO DATE)

L2 ANSWER 2 OF 3 REGISTRY COPYRIGHT 2003 ACS
RN 152166-55-7 REGISTRY
CN Deaminase, double-stranded ribonucleate adenosine (9CI) (CA INDEX NAME)
OTHER NAMES:
CN ADAR deaminase
CN ADAR1
CN ADAR2
CN **Adenosine deaminase**
CN Deaminase, adenosine, RNA-dependent
CN Double-stranded RNA adenine deaminase
CN Double-stranded RNA adenosine deaminase
CN Double-stranded RNA-specific adenosine deaminase
CN Double-stranded RNA-specific editase 1
CN DRADA
MF Unspecified
CI MAN
SR CA
LC STN Files: ADISNEWS, AGRICOLA, BIOSIS, CA, CAPLUS, CASREACT, CIN, PROMT, TOXCENTER, USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
165 REFERENCES IN FILE CA (1957 TO DATE)
7 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
165 REFERENCES IN FILE CAPLUS (1957 TO DATE)

L2 ANSWER 3 OF 3 REGISTRY COPYRIGHT 2003 ACS
RN 9026-93-1 REGISTRY
CN Deaminase, adenosine (9CI) (CA INDEX NAME)
OTHER NAMES:
CN Adenosine aminohydrolase
CN **Adenosine deaminase**
CN Deoxyadenosine deaminase
CN E.C. 3.5.4.4
MF Unspecified
CI MAN
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, DDFU, DRUGU, EMBASE, IFICDB, IFIPAT, IFIUDB, IPA, MSDS-OHS, PHAR, PROMT, TOXCENTER, USPAT2, USPATFULL
Other Sources: EINECS**
(**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
3793 REFERENCES IN FILE CA (1957 TO DATE)
58 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
3796 REFERENCES IN FILE CAPLUS (1957 TO DATE)

=> s alkaline phosphatase/cn
L3 1 ALKALINE PHOSPHATASE/CN

```
=> d

L3   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2003 ACS
RN   9001-78-9  REGISTRY
CN   Phosphatase, alkaline (9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   AIP
CN   Alkaline phenyl phosphatase
CN   alkaline phosphatase
CN   Alkaline phosphatase
CN   Alkaline phosphohydrolase
CN   Alkaline phosphomonoesterase
CN   E.C. 3.1.3.1
CN   Ostase
MF   Unspecified
CI   MAN
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO,
       CA, CABA, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST,
       CIN, CSCHEM, CSNB, EMBASE, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE,
       MSDS-OHS, NAPRALERT, NIOSHTIC, PIRA, PROMT, TOXCENTER, ULIDAT, USPAT2,
       USPATFULL
     Other Sources:   EINECS**, TSCA**
        (**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
          31945 REFERENCES IN FILE CA (1957 TO DATE)
           1039 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
          31988 REFERENCES IN FILE CAPLUS (1957 TO DATE)


=>
```

L13 ANSWER 65 OF 65 CA COPYRIGHT 2003 ACS
AN 75:71772 CA
TI Cyclic 3',5'-AMP phosphodiesterase of Saccharomyces carlsbergensis. Inhibition by adenosine 5'-triphosphate, inorganic pyrophosphate, and inorganic polyphosphate
AU Speziali, G. A. G.; Van Wijk, R.
CS Van 't Hoff Lab., State Univ., Utrecht, Neth.
SO Biochimica et Biophysica Acta (1971), 235(3), 466-72
CODEN: BBACAQ; ISSN: 0006-3002
DT Journal
LA English
AB Cyclic 3',5'-AMP phosphodiesterase activity was demonstrated in yeast by measuring AMP formation from cyclic 3',5'-AMP (I). Enzyme activity was optimum at pH 8.5 and showed a 2-fold stimulation in the presence of 4mM manganese. Enzyme activity was only slightly affected by Mg2+, Ca2+, or **EDTA**. Activity was inhibited by ATP, inorganic polyphosphate, and pyrophosphate; these inhibitions were of the mixed type. The physiological significance of this inhibition is discussed.

=>

> d bib ab ind 2 9 10 13 14 15 18 23 22 24 25

L8 ANSWER 2 OF 28 CA COPYRIGHT 2003 ACS
AN 138:234370 CA
TI A novel cycling assay for nicotinic acid-adenine dinucleotide phosphate with nanomolar sensitivity
AU Graeff, Richard; Lee, Hon Cheung
CS Department of Pharmacology, University of Minnesota, Minneapolis, MN, 55455, USA
SO Biochemical Journal (2002), 367(1), 163-168
CODEN: BIJOAK; ISSN: 0264-6021
PB Portland Press Ltd.
DT Journal
LA English
AB Nicotinic acid-adenine dinucleotide phosphate (NAADP) is a novel nucleotide derived from NADP that has now been shown to be active in releasing Ca2+ from intracellular stores in a wide variety of cells ranging from plant to human. Despite the obvious importance of monitoring its cellular levels under various physiol. conditions, no assay has been reported for NAADP to date. In the present study, a widely applicable assay for NAADP with high sensitivity is described. NAADP was first dephosphorylated to nicotinic acid-adenine dinucleotide by treatment with alk. phosphatase. The conversion was shown to be stoichiometric. NMN-adenylyltransferase was then used to convert nicotinic acid-adenine dinucleotide into NAD in the presence of high concns. of NMN. The resultant NAD was amplified by a cycling assay involving alc. dehydrogenase and diaphorase. Each time NAD cycled through these coupled reactions, a mol. of highly fluorescent resorufin was generated. The reaction could be performed for hours, resulting in more than a 1000-fold amplification. Concns. of NAADP over the 10-20 nM range could be routinely measured. This novel cycling assay was combined with an enzymic treatment to provide the necessary specificity for the assay. NAADP was found to be resistant to NADase and apyrase. Pretreatment of samples with a combination of the hydrolytic enzymes completely eliminated the interference from common nucleotides. The versatility of the cycling assay can also be extended to measure nicotinic acid, which is a substrate in the synthesis of NAADP catalyzed by ADP-ribosyl cyclase, over the micromolar range. All the necessary reagents for the cycling assay are widely available and it can be performed using a multi-well fluorescence plate reader, providing a high-throughput method. This is the first assay reported for NAADP and nicotinic acid, which should be valuable in elucidating the messenger functions of NAADP.
CC 9-16 (Biochemical Methods)
ST nicotinic acid adenine dinucleotide phosphate cycling assay; cycling assay nicotinic acid
IT Fluorometry
(cycling assay for nicotinic acid-adenine dinucleotide phosphate and for nicotinic acid with interfering nucleotides with nanomolar sensitivity)
IT Nucleotides, processes
RL: REM (Removal or disposal); PROC (Process)
(cycling assay for nicotinic acid-adenine dinucleotide phosphate and for nicotinic acid with interfering nucleotides with nanomolar sensitivity)
IT 59-67-6, Nicotinic acid, analysis
RL: ANT (Analyte); ANST (Analytical study)
(cycling assay for nicotinic acid-adenine dinucleotide phosphate and for nicotinic acid with interfering nucleotides with nanomolar sensitivity)
IT 5502-96-5, Nicotinic acid-adenine dinucleotide phosphate
RL: ANT (Analyte); ARU (Analytical role, unclassified); ANST (Analytical study)
(cycling assay for nicotinic acid-adenine dinucleotide phosphate and for nicotinic acid with interfering nucleotides with nanomolar

sensitivity)
IT 53-84-9, NAD 1094-61-7, NMN 6450-77-7, Nicotinic acid-adenine dinucleotide **9000-95-7**, Apyrase 9001-68-7, Diaphorase **9001-78-9** 9031-72-5, Alcohol dehydrogenase 9032-65-9, NADase 9032-70-6, NMN-adenylyltransferase 135622-82-1, ADP-ribosyl cyclase
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(cycling assay for nicotinic acid-adenine dinucleotide phosphate and for nicotinic acid with interfering nucleotides with nanomolar sensitivity)
RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 9 OF 28 CA COPYRIGHT 2003 ACS
AN 135:119239 CA
TI Detection of phosphate using coupled enzymatic reactions
IN Zhou, Mingjie; Haugland, Richard P.
PA Molecular Probes, Inc., USA
SO U.S., 18 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6265179	B1	20010724	US 2000-495882	20000201
	GB 2360846	A1	20011003	GB 2001-2200	20010129
PRAI	US 2000-495882	A	20000201		

OS MARPAT 135:119239
AB Inorg. phosphate may be detected and optionally quantified via the coupling of a phosphate-dependent enzymic reaction with an enzyme system that generates hydrogen peroxide in the presence of a chromogenic or fluorogenic peroxidase substrate. Phosphate consuming or phosphate-producing enzymes or their substrates may also be detected and/or quantified, including pyrophosphatase enzymes or pyrophosphatase. An assay for inorg. phosphate used purine nucleoside phosphorylase, xanthine oxidase, Amplex red reagent, superoxide dismutase, horseradish peroxidase, and inosine.
IC ICM C12Q001-28
ICS C12Q001-42; C12Q001-26; C12Q001-54
NCL 435028000
CC 9-2 (Biochemical Methods)
Section cross-reference(s): 7
ST phosphate detn coupled reaction enzyme; pyrophosphatase detn phosphate enzyme
IT Biological materials
Culture media
(anal. of; detection of phosphate using coupled enzymic reactions)
IT Biotechnology
(biochips, reaction on; detection of phosphate using coupled enzymic reactions)
IT Body fluid
Buffers
Coupling reaction
Environmental analysis
Fluorometry
Test kits
(detection of phosphate using coupled enzymic reactions)
IT Enzymes, analysis
RL: ANT (Analyte); ARG (Analytical reagent use); BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(detection of phosphate using coupled enzymic reactions)
IT Nucleotides, uses
Phosphopeptides

Phosphoproteins
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(detection of phosphate using coupled enzymic reactions)

IT Calmodulins
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(detection of phosphate using coupled enzymic reactions)

IT Salts, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(detection of phosphate using coupled enzymic reactions)

IT Cell
(lysate, anal. of; detection of phosphate using coupled enzymic reactions)

IT Fluidization
(microfluidization, reaction on chips for; detection of phosphate using coupled enzymic reactions)

IT Reagents
RL: AMX (Analytical matrix); ANST (Analytical study)
(phosphate contamination in; detection of phosphate using coupled enzymic reactions)

IT Enzymes, analysis
RL: ANT (Analyte); ANST (Analytical study)
(phosphate-producing; detection of phosphate using coupled enzymic reactions)

IT Microtiter plates
(reaction in wells of; detection of phosphate using coupled enzymic reactions)

IT Carbohydrates, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(sugar phosphates; detection of phosphate using coupled enzymic reactions)

IT 56-65-5, 5'-ATP, analysis
RL: AMX (Analytical matrix); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(detection of phosphate using coupled enzymic reactions)

IT 9001-37-0, Glucose oxidase
RL: AMX (Analytical matrix); ARG (Analytical reagent use); BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(detection of phosphate using coupled enzymic reactions)

IT 60-92-4, CAMP **9000-95-7**, Apyrase 9001-77-8, Acid phosphatase **9001-78-9** 9012-42-4, Adenylyl cyclase 9025-73-4, Serine phosphatase 9025-75-6, Protein phosphatase 9027-69-4, Adenosine-5'-diphosphatase 9027-73-0, 5'-Nucleotidase 9054-75-5, Guanylate cyclase 9059-32-9, Guanosine triphosphatase 9075-51-8, Nucleotide triphosphatase 37184-63-7, Inositol phosphatase 79747-53-8, Tyrosine phosphatase
RL: ANT (Analyte); ANST (Analytical study)
(detection of phosphate using coupled enzymic reactions)

IT 69-79-4, Maltose 9024-82-2, Pyrophosphatase
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(detection of phosphate using coupled enzymic reactions)

IT 9013-05-2, Phosphatase
RL: ANT (Analyte); ARG (Analytical reagent use); BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(detection of phosphate using coupled enzymic reactions)

IT 14265-44-2, Phosphate, analysis
RL: ANT (Analyte); ARG (Analytical reagent use); FMU (Formation, unclassified); RCT (Reactant); ANST (Analytical study); FORM (Formation, nonpreparative); RACT (Reactant or reagent); USES (Uses)
(detection of phosphate using coupled enzymic reactions)

IT 58-63-9, Inosine 61-19-8, AMP, uses 67-07-2D, Creatine phosphate,

compds. 146-80-5, Xanthosine 288-32-4, Imidazole, uses 9032-10-4, Phosphorylase-a 68247-19-8D, Inositol phosphate, compds. 109244-58-8, dihydrorhodamine 123 119171-73-2, Amplex red
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(detection of phosphate using coupled enzymic reactions)

IT 9001-05-2, Catalase 9001-05-2D, Catalase, immobilized 9002-17-9, Xanthine oxidase 9003-99-0, Peroxidase 9030-19-7, Maltose phosphorylase 9030-21-1, Purine nucleoside phosphorylase 9035-73-8, Oxidase 9035-73-8D, Oxidase, immobilized 9035-74-9, Phosphorylase 9035-74-9D, Phosphorylase, immobilized 9040-59-9, 3',5'-Cyclic nucleotide phosphodiesterase 9054-89-1, Superoxide dismutase 9074-06-0, Sucrose phosphorylase 37205-59-7, Trehalose phosphorylase
RL: ARG (Analytical reagent use); BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(detection of phosphate using coupled enzymic reactions)

IT 58-08-2, Caffeine, analysis 60-00-4, EDTA, analysis 7447-40-7, Potassium chloride, analysis 7647-14-5, Sodium chloride, analysis 7773-01-5, Manganese chloride 7786-30-3, Magnesium chloride, analysis 10043-52-4, Calcium chloride, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(detection of phosphate using coupled enzymic reactions)

IT 50-99-7, Glucose, reactions 59-56-3 2466-09-3, Diphosphoric acid 7722-84-1, Hydrogen peroxide, reactions
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(detection of phosphate using coupled enzymic reactions)

IT 154-87-0, Cocarboxylase
RL: AMX (Analytical matrix); ANST (Analytical study)
(phosphate contamination in; detection of phosphate using coupled enzymic reactions)

IT 9000-83-3
RL: AMX (Analytical matrix); ANT (Analyte); ANST (Analytical study)
(potassium-sodium-dependent; detection of phosphate using coupled enzymic reactions)

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 10 OF 28 CA COPYRIGHT 2003 ACS
AN 135:88915 CA
TI Ectonucleotidases: some recent developments and a note on nomenclature
AU Zimmermann, Herbert
CS AK Neurochemie, Biozentrum der J.W. Goethe-Universitat, Frankfurt am Main, D-60439, Germany
SO Drug Development Research (2001), 52(1/2), 44-56
CODEN: DDREDK; ISSN: 0272-4391
PB Wiley-Liss, Inc.
DT Journal; General Review
LA English
AB A review with 115 refs. Extracellular nucleotides such as ATP, ADP, UTP, UDP, and also diadenosine polyphosphates act as signaling mols. and can be inactivated by hydrolysis via ectonucleotidases. A considerable no. of surface-located enzymes can potentially be involved in the extracellular hydrolysis pathway. These include the E-NTPDase family (ectonucleoside triphosphate diphosphohydrolase family), the E-NPP family (ectonucleotide pyrophosphatase/phosphodiesterase family), ecto-5'-nucleotidase, and alk. phosphatases. In addn., activity of ectonucleoside diphosphokinase can interconvert extracellular nucleotides, and ATP can be used as a co-substrate of ectoprotein kinase in the phosphorylation of surface-located proteins. Members of the various ectonucleotidase families reveal overlapping substrate specificity and tissue distribution whose functional significance needs to be further elucidated. Considerable progress has been made in the past several years in characterizing novel enzyme species and their mol. and functional

properties. First knock-out mice reveal insight into physiol. processes governed by the activity of specific ectonucleotidases. Together this work has led to a deeper understanding of the pathways of extracellular nucleotide metab., including their interplay with P2 and P1 receptors or also other physiol. mechanisms.

CC 7-0 (Enzymes)

ST review nucleotidase ectonucleotidase nomenclature

IT Enzymes, biological studies
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(ectoenzymes, nucleotidases; recent developments in ectonucleotidase research and a note on nomenclature)

IT Nomenclature, general
(recent developments in ectonucleotidase research and a note on nomenclature)

IT 9033-33-4, Nucleotidase
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(ecto-; recent developments in ectonucleotidase research and a note on nomenclature)

IT **9000-95-7**, Ectonucleoside triphosphate diphosphohydrolase
9001-78-9, Alkaline phosphatase 9025-82-5, Phosphodiesterase
9026-51-1, Nucleoside diphosphokinase 9027-73-0, Ecto-5'-nucleotidase
9032-64-8
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process)
(recent developments in ectonucleotidase research and a note on nomenclature)

RE.CNT 115 THERE ARE 115 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 13 OF 28 CA COPYRIGHT 2003 ACS

AN 133:132109 CA

TI Enzymatic and fluorometric assay for measuring cAMP and adenylate cyclase

IN Sugiyama, Atsushi

PA Fuso Pharmaceutical Industries, Ltd., Japan

SO Jpn. Tokkyo Koho, 18 pp.
CODEN: JTXXFF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 3059435	B1	20000704	JP 1999-73690	19990318
JP 2000262296	A2	20000926		
WO 2000055356	A1	20000921	WO 2000-JP1494	20000313
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1164199	A1	20011219	EP 2000-908024	20000313
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRAI JP 1999-73690	A	19990318		
WO 2000-JP1494	W	20000313		

AB A simple and highly sensitive enzymic fluorescence quantitation assay

method is provided for rapidly measuring cAMP and adenylate cyclase in a biol. sample (e.g., body fluid) contg. intrinsic non-cyclic adenine nucleotides without using radioactive reagents. The intrinsic non-cyclic adenine nucleotides (e.g., ATP, ADP, AMP) and glucose-6-phosphate present in the sample are eliminated by adding sufficient amts. of apyrase, adenosine deaminase and alk. phosphatase. CAMP is enzymically transformed to AMP with phosphodiesterase. Then, the amt. of AMP is fluorometrically detd. as NADPH after a series of enzymic reactions without using radioactive reagents.

IC ICM C12Q001-06
ICS C12Q001-34; C12Q001-42; C12Q001-48

CC 9-2 (Biochemical Methods)
Section cross-reference(s): 7

ST cAMP adenylate cyclase enzymic analysis fluorometry

IT Analysis
(enzymic anal.; enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT Body fluid
Chelating agents
Fluorometry
Mammal (Mammalia)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 60-92-4, CAMP
RL: ANT (Analyte); ANST (Analytical study)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 9012-42-4, Adenylate cyclase
RL: ANT (Analyte); BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 53-57-6, NADPH
RL: ANT (Analyte); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 56-65-5, 5'-ATP, analysis 61-19-8, 5'-AMP, analysis
RL: ANT (Analyte); PEP (Physical, engineering or chemical process); REM (Removal or disposal); ANST (Analytical study); PROC (Process)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 53-59-8, NADP+ **9000-95-7**, Apyrase 9001-37-0, Glucose oxidase 9001-40-5, Glucose-6-phosphate dehydrogenase 9001-51-8, Hexokinase 9001-59-6, Pyruvate kinase **9001-78-9**, Alkaline phosphatase 9001-81-4, Phosphoglucomutase 9001-82-5, 6-Phosphogluconate dehydrogenase 9013-02-9, Myokinase 9014-00-0, Luciferase 9025-82-5, Phosphodiesterase 9026-93-1, Deaminase, adenosine 9027-73-0, 5'-Nucleotidase 9035-74-9, Glycogen phosphorylase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 9005-79-2, Glycogen, uses
RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); REM (Removal or disposal); ANST (Analytical study); PROC (Process); USES (Uses)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 60-00-4, EDTA, analysis
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 58-64-0, 5'-ADP, processes

RL: PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

IT 73-24-5D, Adenine, nucleotides
RL: REM (Removal or disposal); PROC (Process)
(non-cyclic; enzymic and fluorometric assay for measuring cAMP and adenylate cyclase)

L8 ANSWER 14 OF 28 CA COPYRIGHT 2003 ACS
AN 132:194619 CA
TI Nucleotidyl-tyrosine and nucleotidyl-peptides containing tyrosine. Hydrolysis by various enzymes, separation and characterization by HPLC
AU Liakopoulou-Kyriakides, M.; Tsoleridis, C. A.; Pantazaki, A. A.; Metaxas, A.
CS Department of Chemical Engineering, Section of Chemistry, University of Thessaloniki, Thessaloniki, 54006, Greece
SO Epitheorese Klinikes Farmakologias kai Farmakokinetikes, International Edition (1999), 13(1), 43-48
CODEN: EFKEEB; ISSN: 1011-6583
PB Pharmakon-Press
DT Journal
LA English
AB A series of derivs. of tyrosine and peptides contg. tyrosine with uridine-5'-monophosphate and thymidine-5'-monophosphate, through the functional hydroxyl group of tyrosine, were synthesized by the dicyclohexylcarbodiimide method in pyridine at 35-40.degree.C. The effect of various esterases on the stability of the phosphoester bond was investigated. The products were purified and characterized by HPLC and/or other spectroscopic techniques.
CC 34-2 (Amino Acids, Peptides, and Proteins)
Section cross-reference(s): 6, 7, 33
ST nucleotidyl tyrosine peptide prepn hydrolysis enzyme
IT Nucleopeptides
RL: BPR (Biological process); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
(tyrosine-contg.; prepn. of nucleotidyl-tyrosine and nucleotidyl-peptides contg. tyrosine, hydrolysis by various enzymes, sepn. and characterization by HPLC)
IT 9025-82-5, Phosphodiesterase
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(I; prepn. of nucleotidyl-tyrosine and nucleotidyl-peptides contg. tyrosine, hydrolysis by various enzymes, sepn. and characterization by HPLC)
IT **9000-95-7**, Apyrase 9001-77-8, Acid phosphatase **9001-78-9**
9003-98-9, DNase I 9013-53-0, Micrococcal nuclease 9024-82-2, Inorg. pyrophosphatase 9027-73-0, 5'-Nucleotidase 9068-54-6, Phosphodiesterase II 37288-25-8, Nuclease S1
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(prepn. of nucleotidyl-tyrosine and nucleotidyl-peptides contg. tyrosine, hydrolysis by various enzymes, sepn. and characterization by HPLC)
IT 260059-74-3P 260059-75-4P
RL: BPR (Biological process); BSU (Biological study, unclassified); RCT (Reactant); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(prepn. of nucleotidyl-tyrosine and nucleotidyl-peptides contg. tyrosine, hydrolysis by various enzymes, sepn. and characterization by HPLC)
IT 58-97-9, 5'-Uridylic acid, reactions 365-07-1, 5'-TMP 4326-36-7 15149-72-1 116607-02-4

RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of nucleotidyl-tyrosine and nucleotidyl-peptides contg. tyrosine, hydrolysis by various enzymes, sepn. and characterization by HPLC)

IT 260059-81-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. of nucleotidyl-tyrosine and nucleotidyl-peptides contg. tyrosine, hydrolysis by various enzymes, sepn. and characterization by HPLC)

IT 260059-76-5P 260059-77-6P 260059-78-7P 260059-79-8P 260059-82-3P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of nucleotidyl-tyrosine and nucleotidyl-peptides contg. tyrosine, hydrolysis by various enzymes, sepn. and characterization by HPLC)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 15 OF 28 CA COPYRIGHT 2003 ACS
AN 132:119584 CA
TI A method for measuring an intracellular ATP by efficiently inactivating an enzyme for decomposing background ATP
IN Murakami, Shigeharu; Hattori, Noriaki; Igarashi, Toshinori
PA Kikkoman Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000032997	A2	20000202	JP 1998-202402	19980717
PRAI JP 1998-202402		19980717		

AB A convenient, stable and highly sensitive method is provided for measuring an objective substance (e.g., intracellular ATP) by incorporating a simple process of inactivating an enzyme used for removing a measurement-interfering substance (e.g, background ATP). The method comprises the first process for removing a measurement-interfering substance by contacting the sample with an enzyme (e.g., ATP-decompg. enzyme), the second process for inactivating the enzyme by changing the pH of the reaction system, and the third process for measuring the objective substance extd. from the sample. An ATP-decompg. enzyme can be one or more than one enzymes selected from a group of adenosinephosphate deaminase, apyrase, alk. phosphatase, acid phosphatase, hexokinase, ATPase, and phosphodiesterase. Intracellular ATP of Escherichia coli was successfully measured with luciferin-luciferase luminescence method after the ATP extn. agent consisting of 0.1% benzalkonium chloride in 0.05M Tris-buffer (pH 12.0) was used for inactivating adenosinephosphate deaminase and apyrase, and for extg. intracellular ATP.

IC ICM C12Q001-34
ICS C12Q001-42; C12Q001-48; C12Q001-66; G01N021-78
CC 9-16 (Biochemical Methods)
ST intracellular ATP extn decompg enzyme inactivation
IT Quaternary ammonium compounds, uses
RL: NUU (Other use, unclassified); USES (Uses)
(alkylbenzyldimethyl, chlorides; method for measuring intracellular ATP by efficiently inactivating enzyme for decompg. background ATP)
IT Chemiluminescence spectroscopy
Escherichia coli
Extractants
pH
(method for measuring intracellular ATP by efficiently inactivating enzyme for decompg. background ATP)
IT 56-65-5, 5'-ATP, analysis

RL: ANT (Analyte); REM (Removal or disposal); ANST (Analytical study); PROC (Process)
(method for measuring intracellular ATP by efficiently inactivating enzyme for decompg. background ATP)

IT 2591-17-5, Luciferin 9014-00-0, Luciferase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(method for measuring intracellular ATP by efficiently inactivating enzyme for decompg. background ATP)

IT 9000-83-3, ATPase **9000-95-7**, Apyrase 9001-51-8, Hexokinase
9001-77-8, Phosphatase, acid **9001-78-9**, Alkaline phosphatase
9025-82-5, Phosphodiesterase 37289-20-6, Deaminase, adenosine (phosphate)
RL: ARU (Analytical role, unclassified); ANST (Analytical study)
(method for measuring intracellular ATP by efficiently inactivating enzyme for decompg. background ATP)

IT 77-86-1, Tris
RL: NUU (Other use, unclassified); USES (Uses)
(method for measuring intracellular ATP by efficiently inactivating enzyme for decompg. background ATP)

L8 ANSWER 18 OF 28 CA COPYRIGHT 2003 ACS
AN 127:80554 CA
TI ATP eliminator and process for determining biological cells
IN Sakakibara, Tasuya; Murakami, Seiji; Hattori, Noriaki; Yajitate, Keiko; Watarai, Teruo; Nakajima, Motoo; Imai, Kazuhiro
PA Kikkoman Corporation, Japan
SO Eur. Pat. Appl., 48 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 781851	A2	19970702	EP 1996-120896	19961227
	EP 781851	A3	19980429		
	R: DE, FR, GB, NL				
	US 5891702	A	19990406	US 1996-780161	19961226
	US 6200767	B1	20010313	US 1999-227108	19990105
PRAI	JP 1995-352423	A	19951228		
	US 1996-780161	A3	19961226		

AB The present invention provides a process for eliminating effectively ATP in a sample by using adenosine phosphate deaminase alone or in combination with at least one enzyme selected from the group consisting of apyrase, alk. phosphatase, acid phosphatase, hexokinase and ATPase, a process for detg. biol. cells contained in foods and beverages in a convenient and precise manner by a bioluminescence method, and a reagent for the anal. In particular, the present invention relates to the evaluation of the biol. contamination of samples such as foods and drinks or the half-products or materials thereof by treating the samples with the ATP eliminator and then measuring ATP in contaminant microorganism cells contained in the samples by the bioluminescence method.

IC ICM C12Q001-34
CC 17-1 (Food and Feed Chemistry)
ST food microorganism contamination detn ATP elimination; beverage microorganism contamination detn ATP elimination; microorganism contamination detn food ATP elimination; bacteria contamination detn food ATP elimination; adenosine phosphate deaminase ATP elimination; bioluminescence ATP detn food contamination microorganism

IT Animal cell
Apple juice
Bacillus subtilis
Bacteria (Eubacteria)
Beverages
Cell

Escherichia coli
Food analysis
Food contamination
Koji
Lactic acid bacteria
Microorganism
Plant analysis
Plant cell
Rice (Oryza sativa)
Saccharomyces cerevisiae
Soy sauce
Soybean curd
Staphylococcus aureus
Yeast
(ATP elimination and biol. cells detection in foods and beverages)

IT Condiments
(catsup; ATP elimination and biol. cells detection in foods and beverages)

IT Fish
(paste; ATP elimination and biol. cells detection in foods and beverages)

IT 56-65-5, 5'-ATP, analysis
RL: ANT (Analyte); REM (Removal or disposal); ANST (Analytical study); PROC (Process)
(ATP elimination and biol. cells detection in foods and beverages)

IT 2591-17-5, Luciferin 9014-00-0, Luciferase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(ATP elimination and biol. cells detection in foods and beverages)

IT 9000-83-3, ATPase **9000-95-7**, Apyrase 9001-51-8, Hexokinase
9001-77-8, Acid phosphatase **9001-78-9** 9025-10-9, AMP deaminase
9026-93-1, Adenosine deaminase 9027-73-0, 5'-Nucleotidase 37289-20-6, Adenosine phosphate deaminase
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); CAT (Catalyst use); BIOL (Biological study); USES (Uses)
(ATP elimination and biol. cells detection in foods and beverages)

L8 ANSWER 23 OF 28 CA COPYRIGHT 2003 ACS
AN 122:50360 CA
TI Amperometric flow-injection analysis of purine nucleotides: comparison of selectivity for hydrolytic cleavage of purine nucleotides
AU Yao, Toshio; Tsureyama, Kiminori; Nakahava, Taketoshi
CS Coll. Eng., Univ. Osaka Prefecture, Osaka, 593, Japan
SO Electroanalysis (1994), 6(8), 706-10
CODEN: ELANEU; ISSN: 1040-0397
PB VCH
DT Journal
LA English
AB Four hydrolases (alk. phosphatase, apyrase, 5'-nucleotidase, and adenosine-5'-triphosphatase) are immobilized onto controlled-pore glass. They are used as the reactor for the enzyme-catalyzed hydrolytic cleavage of purine nucleotides in a flow-injection system based on the combined use of the following coimmobilized purine nucleoside phosphorylase-xanthine oxidase reactor and amperometric detector downstream. The four immobilized hydrolase reactors possess interesting differences in the selectivity for the hydrolytic cleavage of purine nucleotides. The alk. phosphatase reactor catalyzed enzymically the complete conversion of all the purine nucleotides to the corresponding nucleosides. The apyrase reactor converts completely both nucleoside triphosphate and diphosphate to nucleoside monophosphate. The 5'-nucleotidase reactor is selective for the hydrolytic cleavage of nucleoside monophosphate to nucleoside. The anal. importance of these hydrolase-immobilized reactors is discussed for the selective detection of purine nucleotides. The method was used to det. purine nucleotides in seasonings.

CC 9-1 (Biochemical Methods)
Section cross-reference(s): 17, 72, 80
ST purine nucleotide hydrolysis flow injection analysis; immobilized hydrolase reactor purine nucleotide detection; seasoning nucleotide detn flow injection analysis
IT Condiments
(amperometric flow-injection anal. of purine nucleotides and comparison of selectivity for their hydrolysis)
IT Reactors
(biocatalytic, amperometric flow-injection anal. of purine nucleotides and comparison of selectivity for their hydrolysis)
IT Glass, oxide
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(porous, amperometric flow-injection anal. of purine nucleotides and comparison of selectivity for their hydrolysis)
IT Nucleotides, analysis
RL: ANT (Analyte); ANST (Analytical study)
(purine, amperometric flow-injection anal. of purine nucleotides and comparison of selectivity for their hydrolysis)
IT 56-65-5, 5'-ATP, analysis 58-64-0, 5'-ADP, analysis 61-19-8, 5'-AMP, analysis 85-32-5, 5'-GMP 86-01-1, 5'-GTP 86-04-4, 5'-IDP 131-99-7, 5'-IMP 132-06-9, 5'-ITP 146-91-8, 5'-GDP 523-98-8, 5'-Xanthylic acid 6253-56-1, 5'-XTP 14265-44-2, Phosphate, analysis 29042-61-3, 5'-XDP
RL: ANT (Analyte); ANST (Analytical study)
(amperometric flow-injection anal. of purine nucleotides and comparison of selectivity for their hydrolysis)
IT 9002-17-9D, Xanthine oxidase, immobilized 9030-21-1D, Purine nucleoside phosphorylase, immobilized
RL: ARG (Analytical reagent use); CAT (Catalyst use); ANST (Analytical study); USES (Uses)
(amperometric flow-injection anal. of purine nucleotides and comparison of selectivity for their hydrolysis)
IT 9000-83-3D, Adenosine 5'-triphosphatase, immobilized **9000-95-7D**, Apyrase, immobilized **9001-78-9D**, Alkaline phosphatase, immobilized 9027-73-0D, 5'-Nucleotidase, immobilized
RL: CAT (Catalyst use); USES (Uses)
(amperometric flow-injection anal. of purine nucleotides and comparison of selectivity for their hydrolysis)

L8 ANSWER 22 OF 28 CA COPYRIGHT 2003 ACS
AN 122:50485 CA
TI Enzymic fluorometric assay for tissue cAMP
AU Sugiyama, Atsushi; Wiegn, Phi; McKnite, Scott; Lurie, Keith G.
CS Department Medicine, University Minnesota, Minneapolis, MN, 55455, USA
SO Journal of Clinical Laboratory Analysis (1994), 8(6), 437-42
CODEN: JCANEM; ISSN: 0887-8013
PB Wiley-Liss
DT Journal
LA English
AB CAMP is commonly measured using either immunoassay or high-performance liq. chromatog. The current methods are sensitive but may lack versatility and be expensive; also, radioactivity is potentially harmful to the operator and environment. Given these concerns, the authors developed a highly sensitive enzymic fluorometric assay for cAMP. The method consists of five steps: (1) destruction of interfering compds. with apyrase, 5' nucleotidase, adenosine deaminase, and alk. phosphatase; (2) conversion of cAMP to AMP; (3) conversion of AMP to ATP; (4) amplification of ATP by ATP-ADP cycling; and (5) fluorometric measurement of resultant NADPH. CAMP was measured in male Sprague Dawley rats anesthetized with pentobarbital. Stimulated rats received isoproterenol (16 .mu.g/kg, s.q.), and aminophylline (20 mg/kg, s.q.), whereas controls received no addnl. drug. With the enzymic fluorometric assay, cAMP content in heart, liver, and kidney (pmol/mg wet wt.) was 0.34, 0.33, and 0.92 in the

control group and 0.77, 0.66, and 1.53 in the stimulated group, resp. The total assay duration including sample reading procedure varied at 4.5-9.5 h, depending on its sensitivity. CAMP from the same samples was measured using a com. available enzyme immunoassay kit and was very similar to the enzymic fluorometric assay. The authors conclude that this new assay is sensitive, safe, versatile, and inexpensive and can be used to measure cAMP in multiple types of tissue, including biopsy samples weighing <200 .mu.g.

CC 9-5 (Biochemical Methods)
ST enzyme fluorometric assay cAMP
IT Spectrochemical analysis
(fluorometric, enzymic; enzymic fluorometric assay for tissue cAMP)
IT 60-92-4, CAMP
RL: ANT (Analyte); ANST (Analytical study)
(enzymic fluorometric assay for tissue cAMP)
IT **9000-95-7**, Apyrase **9001-78-9** 9026-93-1, Adenosine deaminase 9027-73-0, 5'-Nucleotidase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(enzymic fluorometric assay for tissue cAMP)

L8 ANSWER 24 OF 28 CA COPYRIGHT 2003 ACS
AN 121:173937 CA
TI Enzymic fluorometric assay for adenylate cyclase
IN Lurie, Keith G.; Wiegm, Phi
PA University of Minnesota, USA
SO PCT Int. Appl., 61 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9417198	A1	19940804	WO 1994-US810	19940121
	W: CA, CN, JP				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 5316907	A	19940531	US 1993-7847	19930122
	US 5618665	A	19970408	US 1994-184040	19940121
PRAI	US 1993-7847		19930122		
	US 1994-184040		19940120		

AB A method for measuring adenylate cyclase (AC) in a sample of physiol. material which does not employ radioactive reagents is provided. The method is more sensitive and simpler to perform than prior art assays. The method comprises (a) providing a physiol. sample contg. cAMP produced by endogenous AC, and other endogenous adenine nucleotides selected from the group consisting of ATP, AMP, ADP and mixts. thereof; (b) combining the sample with effective amts. of apyrase, 5'-nucleotidase, so as to enzymically eliminate said other endogenous adenine nucleotides and an amt. of alk. phosphatase to eliminate the glucose-6-phosphate in the sample; (c) enzymically converting the cAMP into AMP; and (d) measuring the amt. of AMP, said amt. providing a measure of the amt. of cAMP and AC in the sample. The AMP may be used to stimulate enzymic prodn. of NADPH, which may be measured fluorometrically.

IC ICM C12Q001-00
ICS C12Q001-44; C12Q001-42; C12Q001-26; C12N009-06; C12N009-14; G01N033-48; G01N021-76
CC 7-1 (Enzymes)
ST adenylate cyclase detn fluorometry AMP NADPH
IT 60-92-4, CAMP
RL: ANST (Analytical study)
(detn. of adenylate cyclase activity and, fluorometric, conversion of cAMP to AMP and AMP stimulation of enzymic prodn. of NADPH in relation to)
IT 9012-42-4, Adenylate cyclase
RL: ANT (Analyte); ANST (Analytical study)

(detn. of, fluorometric, conversion of cAMP to AMP and AMP stimulation of enzymic prodn. of NADPH in)

IT 61-19-8, AMP, analysis
RL: ANST (Analytical study)
(enzymic prodn. and measurement of, in fluorometric detn. of adenylate cyclase)

IT 9026-93-1, Adenosine deaminase
RL: ANST (Analytical study)
(in adenylate cyclase fluorometric detn., conversion of ATP and AMP and adenosine to inosine in relation to)

IT 9027-73-0, 5'-Nucleotidase
RL: ANST (Analytical study)
(in adenylate cyclase fluorometric detn., conversion of ATP and AMP to inosine in relation to)

IT **9000-95-7**, Apyrase
RL: ANST (Analytical study)
(in adenylate cyclase fluorometric detn., conversion of ATP to inosine in relation to)

IT **9001-78-9**, Alk. phosphatase
RL: ANST (Analytical study)
(in adenylate cyclase fluorometric detn., elimination of glucose-6-phosphate in relation to)

IT 53-57-6, NADPH 53-59-8, NADP 56-73-5, Glucose-6-phosphate 328-50-7, .alpha.-Ketoglutarate 9000-90-2, .alpha.-Amylase 9001-37-0, Glucose oxidase 9001-40-5, Glucose-6-phosphate dehydrogenase 9001-81-4, Phosphoglucomutase 9005-79-2, Glycogen, uses 9029-11-2, Glutamate dehydrogenase 9032-10-4, Glycogen phosphorylase a 9036-21-9, CAMP phosphodiesterase 9073-95-4, Phosphogluconate dehydrogenase 10139-18-1, Glucose-1,6-diphosphate 14265-44-2, Phosphate, uses
RL: ANST (Analytical study)
(in fluorometric detn. of adenylate cyclase, conversion of cAMP to AMP and AMP stimulation of enzymic prodn. of NADPH in relation to)

L8 ANSWER 25 OF 28 CA COPYRIGHT 2003 ACS
AN 120:239327 CA
TI An enzymic fluorometric assay for adenosine 3':5'-monophosphate
AU Sugiyama, Atsushi; Lurie, Keith G.
CS Dep. Med., Univ. Minnesota, Minneapolis, MN, 55455, USA
SO Analytical Biochemistry (1994), 218(1), 20-5
CODEN: ANBCA2; ISSN: 0003-2697
DT Journal
LA English
AB An enzymic assay for adenosine 3':5'-monophosphate (cAMP) is described. Current measurement techniques can be expensive, time-consuming, and lack versatility. The crit. step of this new method is the enzymic destruction of endogenous purinergic noncyclic nucleotides. The diester linkage of cAMP is then cleaved and AMP is phosphorylated to ATP. Newly formed ATP is amplified using ATP-ADP cycling reactions and NADPH is measured fluorometrically. The cAMP was measured in neonatal rat ventricular myocytes cultured on std. 100-mm dishes and treated with 2 .mu.M 3-isobutyl-1-methylxanthine .+-. 1 .mu.M isoproterenol. When the enzymic fluorometric assay was compared with an immunocolorimetric assay and a RIA, cAMP content (pmol/plate mean + SE) was 124.3 .+-. 6.7, 130.6 .+-. 3.9, and 144.0 .+-. 4.4 without isoproterenol and 656.4 .+-. 23.5, 659.5 .+-. 54.1, and 677.1 .+-. 48.9 with isoproterenol, resp. The std. curve with the enzymic fluorometric assay is linear, in contrast to the curves of the nonlinear immunocolorimetric assay and RIA. The enzymic fluorometric assay can be used to detect <20 fmol of cAMP/sample and can be adapted to measure <1 fmol/sample. It can also be used to measure the activities of adenylate cyclase and phosphodiesterase. In summary, this enzymic cAMP assay is sensitive, safe, versatile, and inexpensive and has multiple potential applications.
CC 9-2 (Biochemical Methods)
Section cross-reference(s): 7

ST cAMP enzymic fluorometric assay
IT Heart, composition
(ventricle, cAMP of, enzymic fluorometric assay for)
IT 60-92-4, CAMP
RL: ANT (Analyte); ANST (Analytical study)
(detn. of, enzymic fluorometric assay for)
IT **9000-95-7**, Apyrase 9001-40-5, Glucose-6-phosphate dehydrogenase
9001-41-6, Phosphoglucoisomerase 9001-51-8, Hexokinase 9001-59-6,
Pyruvate kinase **9001-78-9**, Alkaline phosphatase 9013-02-9,
Myokinase 9025-82-5, Phosphodiesterase 9026-93-1, Adenosine deaminase
9027-73-0, 5'-Nucleotidase
RL: ANST (Analytical study)
(in cAMP detn. by enzymic fluorometric assay)

=> d his

(FILE 'HOME' ENTERED AT 10:15:56 ON 22 MAY 2003)

FILE 'CA' ENTERED AT 10:16:04 ON 22 MAY 2003

FILE 'REGISTRY' ENTERED AT 10:16:12 ON 22 MAY 2003
L1 1 S APYRASE/CN
L2 3 S ADENOSINE DEAMINASE/CN
L3 1 S ALKALINE PHOSPHATASE/CN

FILE 'CA' ENTERED AT 10:18:18 ON 22 MAY 2003
S 9001-78-9/REG#

FILE 'REGISTRY' ENTERED AT 10:18:38 ON 22 MAY 2003
L4 1 S 9001-78-9/RN

FILE 'CA' ENTERED AT 10:18:38 ON 22 MAY 2003
L5 31944 S L4
S 9000-95-7/REG#

FILE 'REGISTRY' ENTERED AT 10:18:51 ON 22 MAY 2003
L6 1 S 9000-95-7/RN

FILE 'CA' ENTERED AT 10:18:51 ON 22 MAY 2003
L7 706 S L6
L8 28 S L5 AND L7

=> s s 9026-93-1
REGISTRY INITIATED
Substance data SEARCH and crossover from CAS REGISTRY in progress...
Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.

L10 3793 L9

MISSING OPERATOR S L10
COMMAND STACK INTERRUPTED. ENTER "DISPLAY HISTORY"
TO SEE WHICH COMMANDS WERE EXECUTED.

The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s l10 and l8

```
L11           6 L10 AND L8

=> d ti 1-6

L11  ANSWER 1 OF 6  CA  COPYRIGHT 2003 ACS
TI   Enzymatic and fluorometric assay for measuring cAMP and adenylate cyclase

L11  ANSWER 2 OF 6  CA  COPYRIGHT 2003 ACS
TI   ATP eliminator and process for determining biological cells

L11  ANSWER 3 OF 6  CA  COPYRIGHT 2003 ACS
TI   Extracellular purine metabolism

L11  ANSWER 4 OF 6  CA  COPYRIGHT 2003 ACS
TI   Enzymic fluorometric assay for tissue cAMP

L11  ANSWER 5 OF 6  CA  COPYRIGHT 2003 ACS
TI   Enzymic fluorometric assay for adenylate cyclase

L11  ANSWER 6 OF 6  CA  COPYRIGHT 2003 ACS
TI   An enzymic fluorometric assay for adenosine 3':5'-monophosphate


=>
```

L19 ANSWER 1 OF 2 WPIDS (C) 2003 THOMSON DERWENT
AN 2000-485025 [43] WPIDS
DNC C2000-146072
TI Measuring cAMP and adenylate cyclase activity in biological specimen involves removing non-cyclic adenine nucleotide and glucose-6-phosphoric acid using **apyrase**, **alkaline phosphatase** and **adenosine deaminase**.
DC B04 D16
IN SUGIYAMA, A
PA (FUSO) FUSO YAKUHIN KOGYO KK; (FUSO) FUSO PHARM IND LTD
CYC 91
PI JP 3059435 B1 20000704 (200043)* 18p
WO 2000055356 A1 20000921 (200048) JA
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS KE KG KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
JP 2000262296 A 20000926 (200055) 20p
AU 2000029430 A 20001004 (200101)
EP 1164199 A1 20011219 (200206) EN
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
KR 2001103023 A 20011117 (200232)
CN 1344330 A 20020410 (200249)
AU 758115 B 20030313 (200328)
ADT JP 3059435 B1 JP 1999-73690 19990318; WO 2000055356 A1 WO 2000-JP1494 20000313; JP 2000262296 A JP 1999-73690 19990318; AU 2000029430 A AU 2000-29430 20000313; EP 1164199 A1 EP 2000-908024 20000313, WO 2000-JP1494 20000313; KR 2001103023 A KR 2001-710766 20010823; CN 1344330 A CN 2000-805191 20000313; AU 758115 B AU 2000-29430 20000313
FDT AU 2000029430 A Based on WO 200055356; EP 1164199 A1 Based on WO 200055356; AU 758115 B Previous Publ. AU 200029430, Based on WO 200055356
PRAI JP 1999-73690 19990318
AB JP 3059435 B UPAB: 20000907
NOVELTY - Removing non-cyclic adenine nucleotide and endogenous glucose-6-phosphoric acid from endogenous ATP, ADP and AMP in a biological specimen involves processing the biological specimen using **apyrase**, **alkaline phosphatase** and **adenosine deaminase** at specified quantities. cAMP is enzymatically converted into AMP and the quantity of AMP is measured without using any radioactive reagent.
USE - For measuring cyclic AMP and adenylate cyclase activity in a biological specimen (claimed).
ADVANTAGE - The method provides non-radioactive enzymatic fluorimetry and measures adenylate cyclase activity. The reaction time is less.
Dwg.0/4

L19 ANSWER 2 OF 2 WPIDS (C) 2003 THOMSON DERWENT
AN 1994-264111 [32] WPIDS
CR 1994-176261 [21]
DNN N1994-207729 DNC C1994-120908
TI Measuring adenylate cyclase and cAMP in samples - by removing other adenine nucleotide(s) and glucose-6-phosphate, converting cAMP to AMP and measuring AMP.
DC B04 D16 S03
IN LURIE, K G; SUGIYAMA, A; WIEGN, P; WIEGM, P
PA (MINU) UNIV MINNESOTA
CYC 20
PI WO 9417198 A1 19940804 (199432)* EN 61p
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: CA CN JP

US 5618665 A 19970408 (199720) 24p

ADT WO 9417198 A1 WO 1994-US810 19940121; US 5618665 A CIP of US 1993-7847 19930122, US 1994-184040 19940120

FDT US 5618665 A CIP of US 5316907

PRAI US 1993-7847 19930122; US 1994-184040 19940120

AB WO 9417198 A UPAB: 19940928

A method of measuring adenylate cyclase (AC) activity in a sample of physiological material comprises (a) combining a sample of physiological material comprising (i) cAMP produced by endogenous AC, (ii) other endogenous adenine nucleotides selected from ATP, AMP and ADP and (iii) glucose-6-phosphate (G-6-P), with amts. of **apyrase**, 5'-nucleotidase and **adenosine deaminase** to enzymatically eliminate the other endogenous adenine nucleotides in the sample and with an amt. of **alkaline phosphatase** (AP) to enzymatically eliminate the G-6-P in the sample, (b) enzymatically converting the cAMP to AMP and (c) measuring the amt. of AMP without the use of radioactive reagents, the amt. providing a measure of the amt. of cAMP and AC in the sample.

USE/ADVANTAGE - The method is used to measure AC and cAMP in tissues and fluids, e.g. to assess cell viability, endocrine-hormonal axis function, phosphodiesterase activity and the activity of signal transduction proteins. The method is sensitive enough to measure cAMP in small biopsy samples weighing less than 0.1mg and can be adapted to measure less than 1 fmol cAMP/sample.

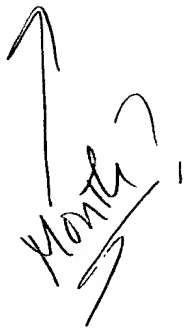
Dwg.0/13

=>

L14 ANSWER 2 OF 3 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
AN 1999:271208 BIOSIS
DN PREV199900271208
TI Measurement of adenylate cyclase activity in the **minute** **bovine ciliary** epithelial cells during the pharmacological stimulation of adrenergic and cholinergic receptors.
AU Chiba, T. (1); Kashiwagi, K. (1); Sugiyama, A. (1); Hashimoto, K. (1); Tsukahara, S. (1)
CS (1) Yamanashi Medical University, Yamanashi Japan
SO IOVS, (March 15, 1999) Vol. 40, No. 4, pp. S496.
Meeting Info.: Annual Meeting of the Association for Research in Vision and Ophthalmology Fort Lauderdale, Florida, USA May 9-14, 1999 Association for Research in Vision and Opthalmology
.
DT Conference
LA English

What was disclosed?

L14 ANSWER 3 OF 3 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
AN 1999:236099 BIOSIS
DN PREV199900236099
TI Measurement of adenylate cyclase activity in the **minute** **bovine ciliary** epithelial cells during the pharmacological stimulation of adrenergic and cholinergic receptors.
AU Sawada, Norifumi; Sugiyama, Atsushi (1); Kashiwagi, Kenji; Tsukahara, Shigeo; Hashimoto, Keitaro
CS (1) Dep. Pharmacol., Yamanashi Med. Univ., Tamaho, Nakakoma, Yamanashi 409-3898 Japan
SO Journal of Clinical Laboratory Analysis, (1999) Vol. 13, No. 2, pp. 90-94.
ISSN: 0887-8013.
DT Article
LA English



L13 ANSWER 9 OF 65 CA COPYRIGHT 2003 ACS
AN 123:309271 CA
TI Divalent metal cation requirement and possible classification of cGMP-inhibited phosphodiesterase as a metallohydrolase
AU Omburo, George A.; Brickus, Tishara; Ghazaleh, Faika A.; Colman, Robert W.
CS Sol Sherry Thombosis Research Center, Temple University School Medicine, Philadelphia, PA, 19140, USA
SO Archives of Biochemistry and Biophysics (1995), 323(1), 1-5
CODEN: ABBIA4; ISSN: 0003-9861
PB Academic
DT Journal
LA English
AB CGMP-inhibited phosphodiesterase (cGI-PDE) has been found to require a divalent metal cation for cAMP hydrolysis. The cGI-PDE isolated from human platelets exhibited significantly higher enzymic activity when incubated with Mn2+, and Co2+. The addn. of Zn2+, Cd2+, Ca2+, K+, or Na+ to the enzyme did not enhance the activity and, when present in high concn. (>1.0 .mu.M), Zn2+ and Cd2+ inhibited the enzymic activity of cGI-PDE. The inhibition by Zn2+ (and Cd2+) was partially prevented by preincubation of the enzyme with Mn2+. The enzyme was also inhibited by metal **chelators EDTA** and 1,10-phenanthroline and not by their non-metal-chelating analogs. The partial protection against chelation (and inhibition) was afforded by AMP (the product of cAMP hydrolysis).

=> d ind 9

L13 ANSWER 9 OF 65 CA COPYRIGHT 2003 ACS
CC 7-3 (Enzymes)
ST cGMP inhibited phosphodiesterase metallohydrolase divalent cation
IT Cations
(divalent, divalent metal cation requirement and possible classification of cGMP-inhibited phosphodiesterase as a metallohydrolase)
IT **9036-21-9**, CGMP-inhibited phosphodiesterase
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(divalent metal cation requirement and possible classification of cGMP-inhibited phosphodiesterase as a metallohydrolase)
IT 7439-96-5, Manganese, biological studies 7440-43-9, Cadmium, biological studies 7440-48-4, Cobalt, biological studies 7440-66-6, Zinc, biological studies
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(divalent metal cation requirement and possible classification of cGMP-inhibited phosphodiesterase as a metallohydrolase)

=>